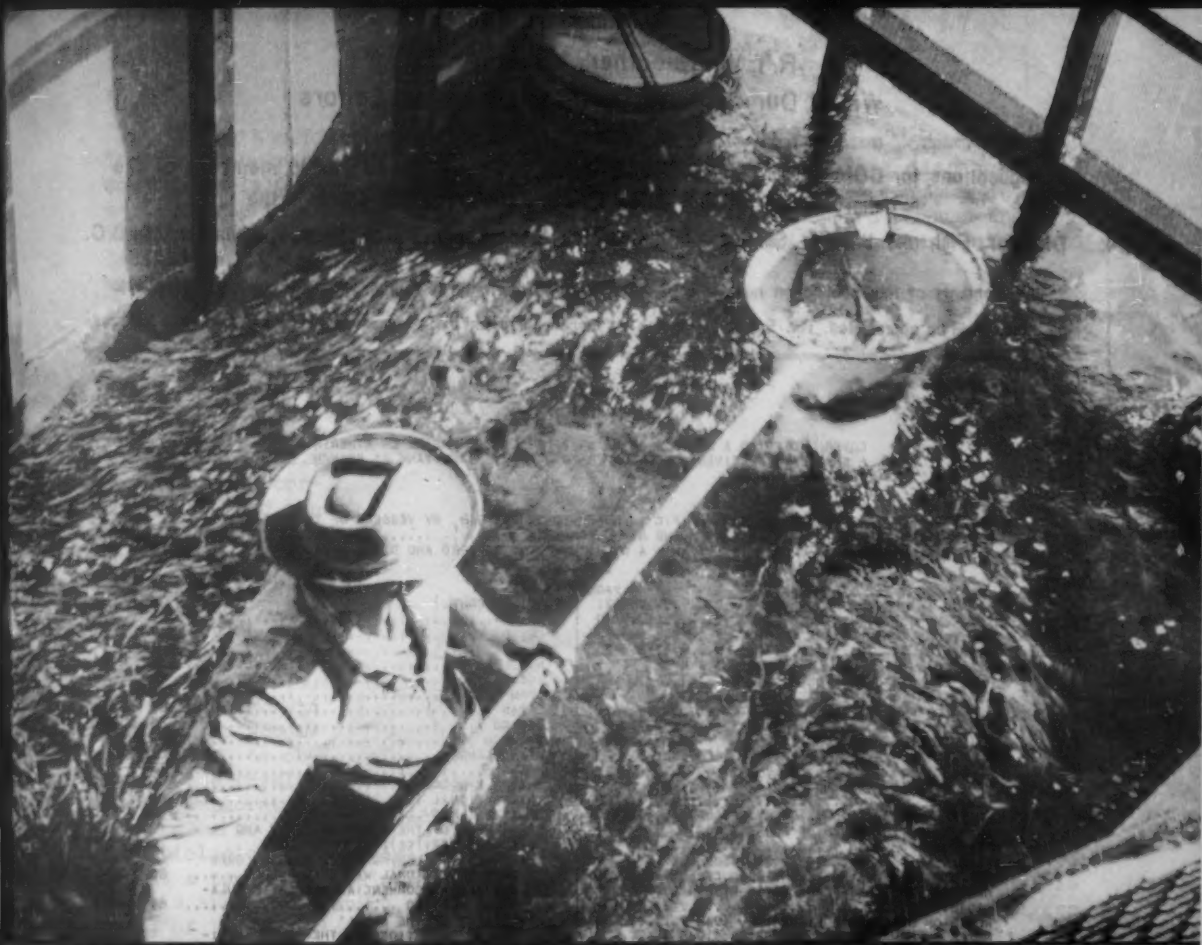


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COMMERCIAL FISHERIES REVIEW



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COMMERCIAL FISHERIES REVIEW



A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE BRANCH OF COMMERCIAL FISHERIES

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FISHERY EXPLORATION IN THE WESTERN PACIFIC

(JANUARY TO JUNE, 1948, BY VESSELS OF THE PACIFIC EXPLORATION COMPANY)

By Q. R. Smith* and M. B. Schaefer**

INTRODUCTION

During the first six months of 1948, the Pacific Exploration Company, operating under contract with the Reconstruction Finance Corporation, dispatched the motor vessels Oregon and Alaska to prospect for tuna in the western Pacific, more particularly in the region of the Hawaiian Islands and southward through the Line Islands, and in the region of the Pacific Trust Territory (former Japanese Mandated Islands) which consists of the Marshall Islands, the Caroline Islands, and the Marianas Islands.

The contract between the R.F.C., a Government corporation, and the Pacific Exploration Company provided that observers of the Fish and Wildlife Service were to be accommodated on these vessels. The authors were detailed to accompany them to observe the results of the exploratory fishing and to collect biological and oceanographical data as practicable. The Alaska was fitted out as a tuna purse-seiner. The Oregon was equipped for live-bait fishing. These vessels are sister ships, being typical West Coast combination seiner-dragger type, of 100 feet in length. Both are the property of the R.F.C.



ALASKA ANCHORED IN SOUTH PASS, AILINGLAPLAP, MARSHALL ISLANDS.

During the course of the voyage, the observers submitted reports on the vessel's activities on the basis of which the South Pacific Investigations of the Fish and Wildlife Service issued reports to the industry in the Service's daily Fishery Products Reports published by the Market News Service and, also, in several trade journals. The present report summarizes the activities of the vessels and the immediate results of their exploration. Data gathered on the biology of the tunas

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and bait fishes and on the hydrography of the region will be published later after analysis has been completed.

The present report covers only the six-month period from the beginning of the explorations in January to June 1948. The vessels, after June 1948, were still engaged in continued exploratory work in the vicinity of the Hawaiian Islands.

EXPLORATIONS BY MV OREGON

French Frigate Shoals to Line Islands Cruise

OBSERVATIONS ON BAIT: The Oregon, after an uneventful trip from San Diego, left Honolulu on January 18, to prospect for bait at French Frigate Shoals in the

Hawaiian chain. The Oregon arrived at French Frigate Shoals on January 21, just as a storm was blowing up. Several days were lost riding at anchor during the blow, but the reefs and small sand islands were thoroughly explored for bait until February 1. On that date, the Oregon had 437 "scoops"^{1/} of live bait in her tanks, in spite of the fact that the work was hampered by rough seas and the inevitable difficulties of fishing in new regions. These bait fish consisted of species of small silverside or atherinid, with the Hawaiian name of "iao."

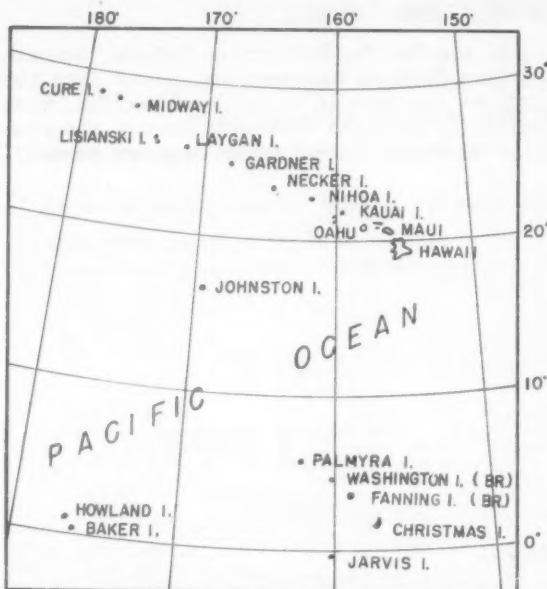


FIGURE 1 - REGION OF HAWAIIAN ISLANDS AND SOUTHWARD WHERE OREGON AND ALASKA PROSPECTED FOR TUNA. THE BALANCE OF THE AREA COVERED BY THESE VESSELS IS SHOWN IN FIGURE 2.

The iao at French Frigate Shoals occurs in schools of varying size, from a score to a thousand or more "scoops." They may be captured by means of a surround net on the sandy beaches inside the reefs near the small islands. Most of the bait was captured at East Island, although some was captured at Tern Island. A "blanket" mesh seine with square openings about a fifth of an inch on

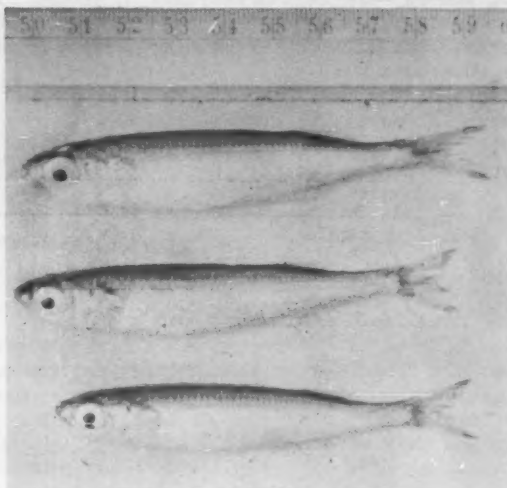
each side was used at first, but a net of half-inch stretched mesh, knotted, was found to be easier to handle and much more effective. Nets of the latter mesh, both 10 and 20 fathoms long and 2½ fathoms deep, were used. The webbing was the same as that used in what the California fishermen commonly call a "Galapagos" net, so-called because of its special use in capturing bait at the Galapagos Islands. The lead line was very heavily weighted. It was set against the beach by two or three men, each carrying part of the net and walking in a half circle around the bait, while two other men kept the bait from going around the ends. The bait is quite tame and does not move much under ordinary circumstances. The net was closed by working the lead line over the bottom by hand, rather than by hauling the wings. A somewhat shallower net than 2½ fathoms would have been just as efficient.

^{1/}A "scoop" is estimated to contain about 10 pounds of fish.

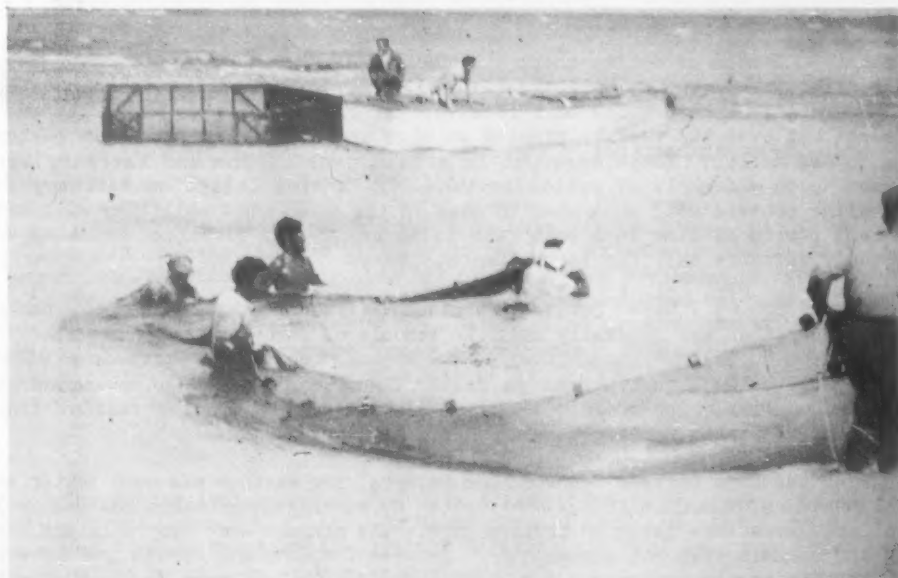
One difficulty encountered was with the receiver used to transport bait from the shore to the ship. The regular West Coast receiver is too deep for this shallow region. What is believed to be needed is a small-capacity receiver (about 50 to 100 scoops) of very shallow draft, not more than 18 inches, which can be towed rapidly. At Honolulu, this function is performed by a skiff having in the center a bait compartment which can be flooded by removing plugs.

It was evident that there are considerable quantities of iao at French Frigate Shoals, even in the winter season, and there are reported to be much greater quantities along the beaches during the summer months. It must be remembered, of course, that this standing crop of bait fish represents an almost virgin stock. How well this stock would stand up if heavily fished could only be ascertained from studying the changes which occur if and when heavy fishing takes place.

Because of continued rough weather, the Oregon did not scout for tuna northwest of Hawaii, but headed south with the bait from French Frigate Shoals to the Line Islands, via Johnston Island, Palmyra, and Jarvis. Christmas Island and Fanning were visited on the way north



SILVERSIDES OR IAO, FROM FRENCH FRIGATE SHOALS, HAWAIIAN ISLANDS. CENTIMETER SCALE.



SEINING BAIT AT FRENCH FRIGATE SHOALS, HAWAIIAN ISLANDS.

from Jarvis, and Honolulu was reached on February 21. At the outset of the trip, the bait was divided among two bait tanks on the afterdeck and a bait well on the port side amidships. Bait in the deck tanks suffered a fairly heavy mortality, but very few fish died in the well. Out of 340 scoops placed in the tanks, only 100 scoops were left on February 3. Though some had been used for chumming schools, a mortality of at least 50 percent was probably suffered by the bait in these tanks. Bait in the brine well, on the other hand, lived very well and some 30 or 40 scoops were still left when the ship reached Honolulu on February 21 (the others having been used to chum tuna schools). We do not know whether the differential mortality between the tanks and the well is to be attributed to a difference in handling during capture or to a difference in conditions in the two types of tanks. We may certainly conclude, however, that:

- (1) This species is suitable for long distance transportation if properly handled.
- (2) Careful studies of methods of handling and transporting are to be desired.

Palmyra Island lagoon was thoroughly prospected for bait on February 8 and 9. The only fish seen which might be used for bait was small mullet, which occurred in quantity along the beaches. There were apparently no fish of either the silverside or herring families here, at least in any quantity. They were not seen during the day and they were not taken under a light at night.

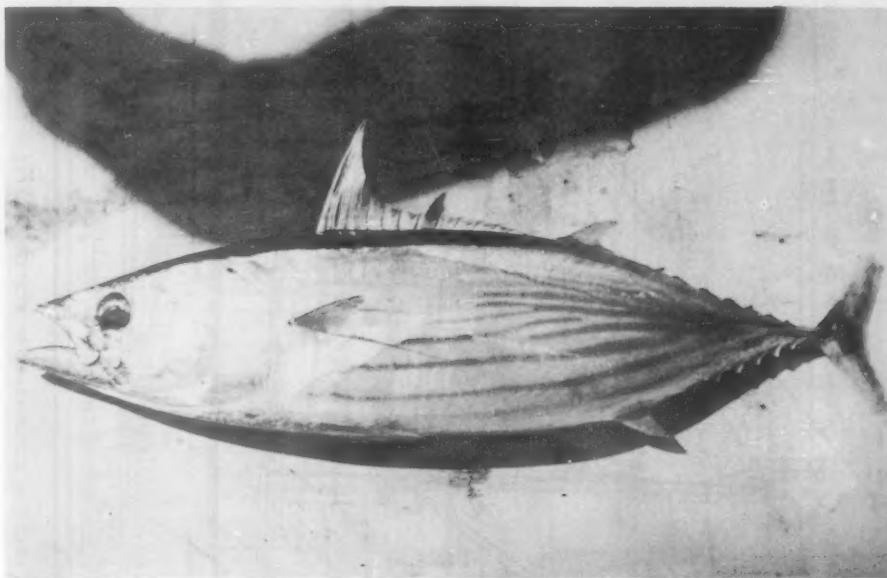
A part of the lagoon at Christmas Island was prospected for bait on February 14. Considerable quantities of mullet and goatfish were evident, but no fish of the silverside, anchovy, or herring families. It is reported, however, that there are quantities of iao and also "nehu" (a small anchovy) here at times. That there may be some truth to this, with respect to iao at least, is attested by the fact that a number were taken under a night light just offshore from the island. No nehu were seen at all.

About 30 scoops of mullet about 6 inches in length, with a few goatfish of similar size, were taken at Christmas Island. Because of engine trouble on the small power boat, however, the bait receiver got into a position where it had to be brought out over the reef by planing at high speed, which resulted in serious damage to the mullet. These were put in a bait tank anyhow and the survivors were used to chum schools of yellowfin tuna off Fanning Island on February 15. These mullet behaved well when used to chum up the tuna. How well they will live for a long period of time in a bait tank is an unanswered question, but they are undoubtedly suitable bait for large tuna, at least.

OBSERVATIONS ON TUNAS: During the cruise from French Frigate Shoals to Johnston Island, the weather was generally bad. No schools of fish were seen; one flock of birds was seen "working," (individual birds diving down to the water or skimming waves, as if feeding), just before we raised Johnston Island, but chumming the area raised no fish. One oceanic skipjack was taken on a trolled feather jig a few miles off Johnston.

During the trip between Johnston and Palmyra, the weather was much better and several schools of oceanic skipjack were located by working birds (terns and boobies). Several specimens were taken on trolled jigs. The schools were very wild and fast moving and chumming was not successful. Between Palmyra and Jarvis and between Jarvis and Christmas, numerous schools of oceanic skipjack were seen often with large flocks of birds working over them. Several oceanic skipjack and small yellowfin tuna were caught on troll lines. The schools were very wild and erratic in their behavior and the crew did not succeed in chumming them to the ship.

At Jarvis Island, a school of "two-pole"^{2/} yellowfin was raised and chummed up to the ship but they bit very indifferently and only 15 fish were caught. A large school of two-pole fish was sighted off Christmas Island, but it was not fished.



OCEANIC SKIPJACK, BONITO, OR AKU, KATSUWONUS PELAMIS FROM LINE ISLANDS.

Off Fanning Island, numerous flocks of working birds were observed, and, under two of these, schools of mixed one-pole and two-pole yellowfin tuna were raised by chumming. These fish took bait readily but stayed some distance out from the ship, and only a few fish were caught by the men in the racks.

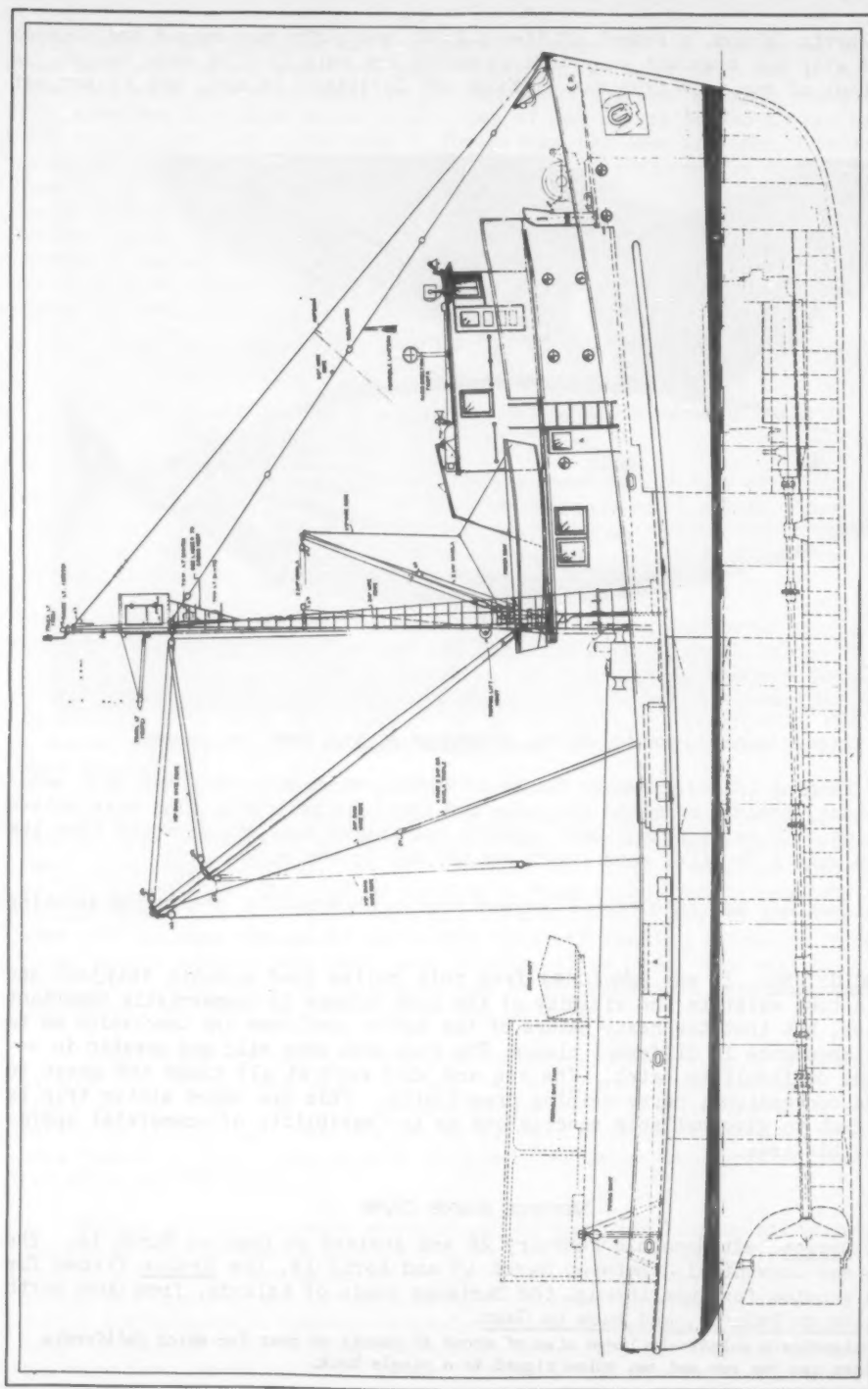
Foul weather was encountered between Fanning and Honolulu, precluding scouting for fish.

CONCLUSIONS: It was concluded from this cruise that oceanic skipjack and yellowfin tuna exist in the vicinity of the Line Islands in commercially important quantities, but that the hasty nature of the survey precludes any conclusion as to relative abundance in different places. The fish seen were wild and erratic in behavior and difficult to catch. The sea and wind were at all times too great to have made conventional purse-seining practicable. This one short winter trip is insufficient to give reliable conclusions as to feasibility of commercial operations in this area.

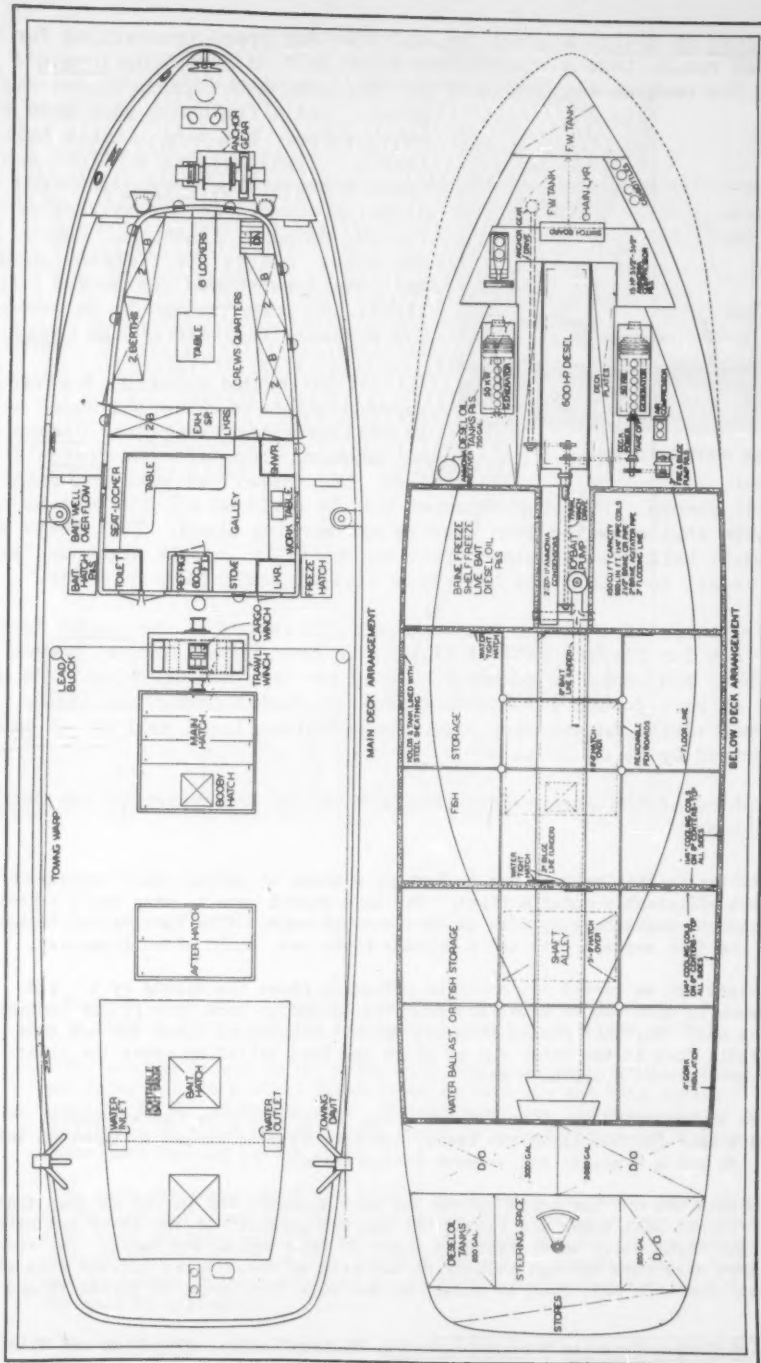
Marianas Islands Cruise

The Oregon left Honolulu February 28 and arrived at Guam on March 14. The trip out was uneventful. Between March 15 and April 19, the Oregon fished for bait and scouted for tuna through the Marianas chain of islands, from Guam north to Farallon de Pajoros, and back to Guam.

^{2/}This designates a relatively large size of about 40 pounds or over for which California fishermen use two men and two poles rigged to a single hook.



OUTBOARD PROFILE OF COMBINATION FISHING VESSEL USED FOR EXPLORATION OF WESTERN PACIFIC FISHERIES.



DECK AND BELOW DECK ARRANGEMENT OF COMBINATION FISHING VESSEL USED IN EXPLORATION OF WESTERN PACIFIC FISHERIES.

OBSERVATIONS ON BAIT: A great deal of time was spent prospecting for bait, for the obvious reason that a tuna clipper needs bait to fish. The Oregon's boats scouted along the beaches and cliffs of all the important islands in the Marianas group, and a few hauls were made with a beach seine, but very little bait was found. Fishing with a light was also tried wherever the Oregon anchored overnight, as she did at the islands of Guam, Tinian, Saipan, Alamegan, Pagon, Maug, and Rota. Three to fifteen pounds of bait could sometimes be netted under a light, but never enough to be worthwhile for a vessel the size of the Oregon.



OREGON MOORED AT GUAM.

There is some evidence, however, that more bait might be collected under a light in shallow water, where the Oregon could not anchor. One of the Oregon's crew left the vessel at Guam and spent some time on a local sampan. He later reported that he could get all the bait he needed under a light in shallow water even when he was working alone. This seems to indicate that small bait boats could operate successfully, and it might be feasible for a larger vessel to obtain its bait from several small bait catchers.

During the course of attempts to catch bait, the master of the Oregon developed a new type of net for fishing under a light. We have called this a "preset net." It was efficient, and could be operated by only two men. Hence, it could be hauled as frequently as bait formed a compact school or "ball" under the light. This effected a great saving in manpower over the prevalent local methods of catching bait, as described by R. O. Smith.³

A description of the construction and use of the preset net by the master of the Oregon follows:

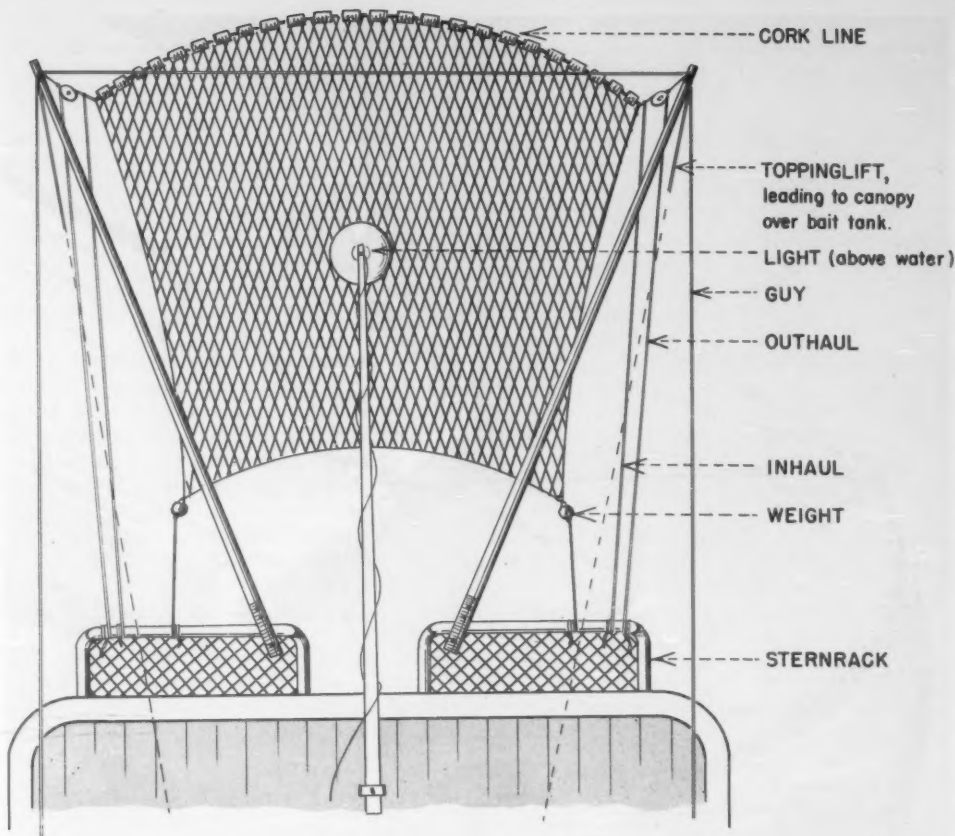
The problem in the Marianas was to develop a means of taking small amounts of wild bait efficiently under a light. The bait showed here in very small schools. A good school might have as much as 15 pounds of bait. This bait was quite wild and in the time necessary to set a regular night net, would often disappear.

The preset net we worked out could be pulled in about one minute by two men. Bait taken in this was in excellent condition since it took very little beating from the net. Any bait missed in a set was not frightened since the net made very little fuss in the water and we often saw bait balled up under the light before we finished brailing a set.

The net we used most was five fathoms along the corks, five fathoms pursed to two and a half fathoms along the leads, and four fathoms pursed to three on the sides. We put a 5-pound lead on each bottom corner.

We set this net off the stern before the bait appeared and pulled it when there was sufficient bait under the light. It was set parallel to the stern and held off by two light poles which extended about 20 feet beyond the racks. Two endless lines were rove through pulleys at the ends of these poles and the ends of the cork line were made fast to these, so the cork line could be pulled in and out.

³Fisheries of Former Japanese Mandated Islands, Fishery Leaflet 273, Fish and Wildlife Service.



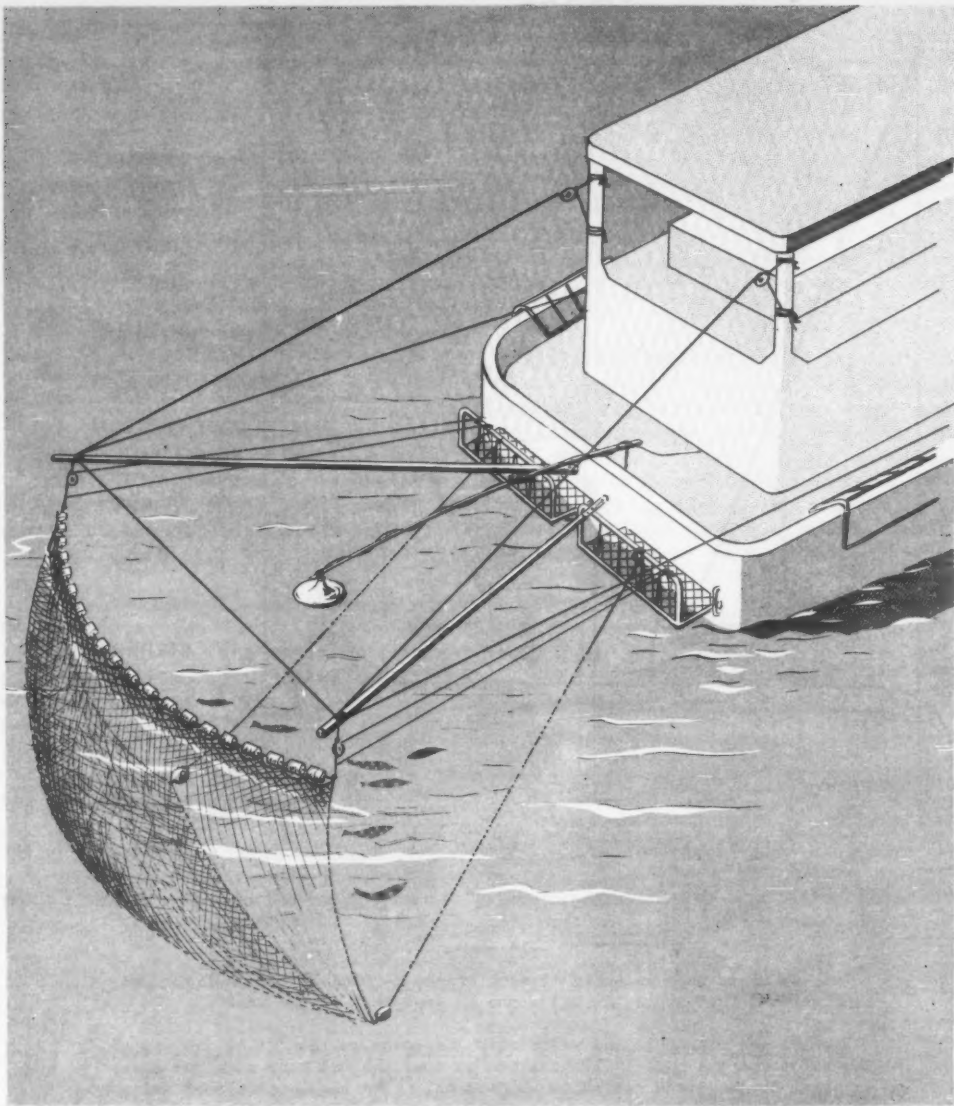
DETAILS OF "PRESET NET" DEVELOPED BY THE MASTER OF THE OREGON FOR BAIT FISHING UNDER A LIGHT.

Haul-in lines were attached to each of the 5-pound leads. A light was hung about a foot above the water and 15 feet back of the racks.

The net was placed in the water with the corks pulled out to the end of the poles and the haul-in lines slack so that the net hung straight down, parallel to the stern and about 20 feet out. The light was placed and when sufficient bait had balled, a set could be made by first pulling up the leads then hauling in the corks.

We were concerned about the effect the hanging net might have on bringing up bait to the light and tested it thoroughly. We were very surprised to find that the bait actually balled better with the net in the water and it was probably due to the fact that the net tends to discourage large fish from making passes at the bait near the surface. By keeping the large fish down, the bait is driven up.

We noticed one other definite advantage to leaving the net in the water. The bait became used to the hanging net, and when a set was made, ran away



"PRESET NET" RIGGED FOR FISHING.

from the moving leads and sides toward the stationary corks instead of running away from the bag. As a result we missed very little bait within the area of the net and we did not need scares at any time.

When we got used to the net, we found that it was very easy to pull without danger of forming pockets. So far we have had only small bait and have had to use the blanket mesh but we hope that the advantages will be increased when we can use the half inch mesh.

The advantages of being able to make sets with the two men on watch are obvious. Several nights we made five or six sets and caught ten or fifteen pounds of bait when there was no time to set a regular night net.

Guam was the best bait area found in the Marianas Islands. Using the preset net described, a vessel with a crew of 6 to 7 men would have no trouble taking 15 to 20 pounds of bait a night for the three weeks of the month during the dark of the moon. The best areas for night bait on Guam are Apra harbor, Port Merizo, and Talofofo Bay. Day bait can be found in smaller quantities along the protected beaches and along the cliffs on the leeward side. A sampan with a crew of 17 to 20 men can take 15 to 20 pounds of bait a day along the cliffs on the leeward side of the Island, by the method described below for Saipan.

Ten pounds of bait is estimated as the minimum requirement for a day's tuna fishing for a sampan and very little of this bait can be carried over from day to day. Half to three-quarters of the bait caught is round herring, the rest being a small anchovy. The largest bait ordinarily caught is two inches long; one-fourth inch blanket mesh is necessary for its capture. It is possible that bait appears in larger quantities seasonally but, from all local information, this is unlikely.

In the Saipan area, no dependable night bait sources were found, but day bait can be made by the local method along the windward side of Saipan and the leeward side of Tinian. In this method of taking bait, the boat is anchored about 40 feet off of and parallel to the cliffs. A square blanket mesh net is laid between the boat and the cliffs and one edge sunk by leads. From 7 to 12 divers then start about 30 to 40 yards from the net and, diving and splashing along the cliffs, they drive the bait into the net. One drive will net from 1 to 3 pounds of bait. Several drives are usually necessary to obtain a day's baiting for a sampan, although they can often be made from the same anchorage. This method requires a minimum of 15 men, but 17 to 20 is more common.

OBSERVATIONS ON TUNAS: The Oregon scouted around all the islands of the Marianas group for tuna or signs of tuna. Yellowfin tuna and oceanic skipjack appeared to be present in commercial quantities. Actual tuna scouting time was severely limited by the more pressing job of looking for bait, and also by unavoidable delays ashore, so that only 5 or 6 full days could properly be called scouting days. During this short time, eight schools of fish were sighted. In each case, fish were seen under flocks of birds, or tuna were caught by a trolled jig in the vicinity where birds were seen. Three schools were identified as oceanic skipjack, one as yellowfin. In addition, about 35 flocks of birds were sighted that appeared to be over tuna or skipjack. If the Oregon had had bait for chumming, more of the schools probably could have been positively identified.

CONCLUSIONS: It is yet premature to reach final conclusions regarding the Marianas area. However, from our short experience there from conversations with local sampan fishermen and observation of their fishing methods, and from the present available data on former Japanese operations, certain important considerations may be recorded regarding the commercial potentialities and means of production of oceanic skipjack. Data on other tunas are yet too scarce to permit similar appraisal.

It is evident that there are sufficient quantities of oceanic skipjack to support a commercial fishery at least large enough to supply all local demands and permit the production of an excess above this for export, either in the round or processed, whichever is the more economically desirable.

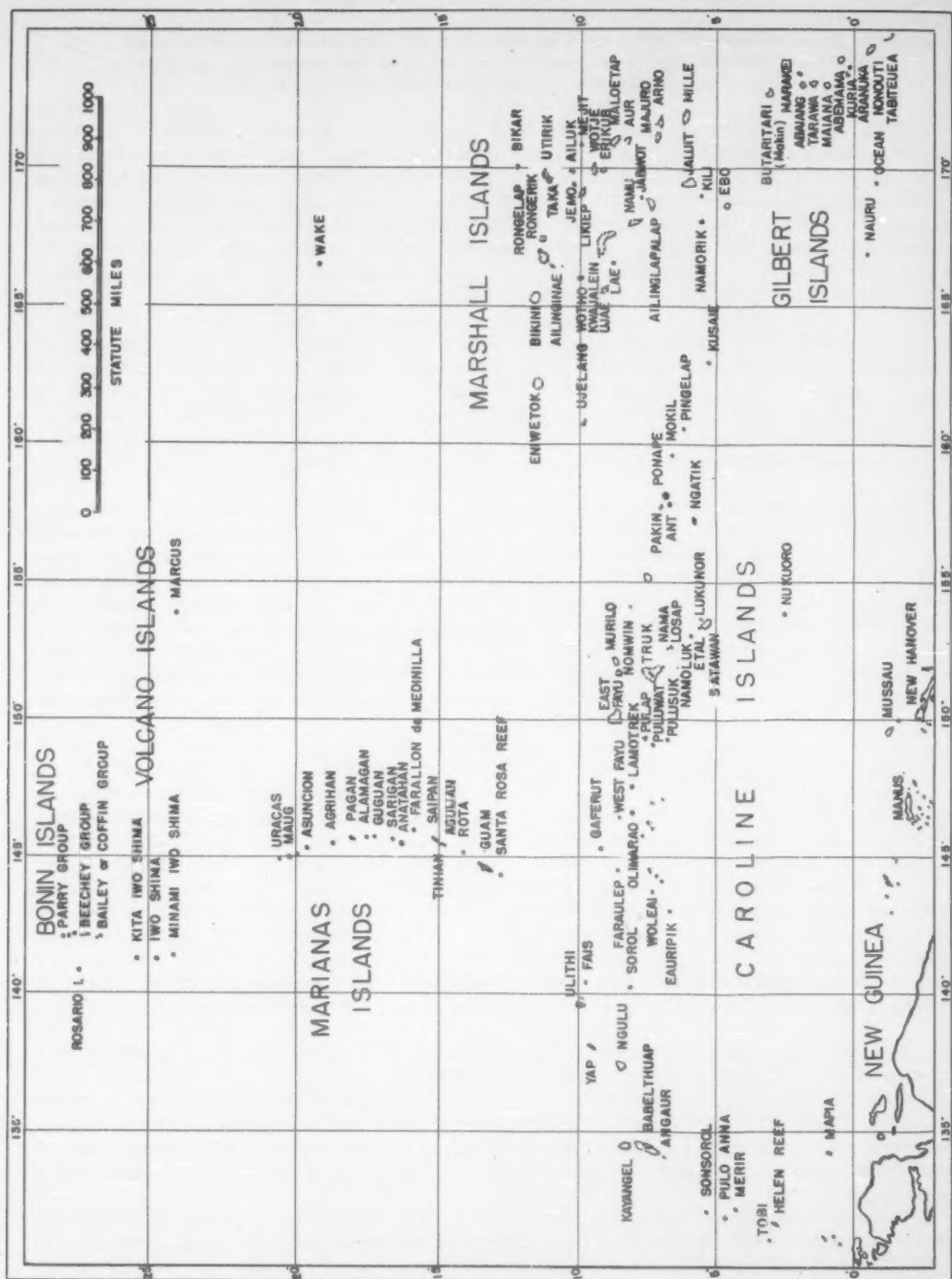


FIGURE 2 - SHOWING MAINLY THE UNITED STATES TRUST TERRITORY OF THE PACIFIC ISLANDS AREA WHERE THE VESSELS OREGON AND ALASKA CARRIED ON PART OF THE PROSPECTING FOR TUNA IN THE WESTERN PACIFIC. THE BALANCE OF THE AREA COVERED BY THESE VESSELS IS SHOWN IN FIGURE 1

On the other hand, the supply of live bait is as yet uncertain and should be the object of further study. The prewar fishery by Japanese (Okinawan) fishermen from Saipan and Tinian, and probably the more northerly islands also, seems to have been limited by the bait supply. From the observations at Guam and from theoretical considerations, it appears likely that bait fishes are more abundant in the Guam area than elsewhere in the Marianas.

The kinds, quantities, and habitat of the bait fishes makes it appear impractical to employ large, long-range vessels like those now used by Californians off Mexico and Central America, unless, perhaps, by establishing separate bait-catching operations, using small boats which would catch and hold bait in pounds from which the larger vessel could bait up. It seems probable that a profitable fishery for oceanic skipjack in the Marianas might be based on small boats of limited individual bait capacity and limited cruising range.

Cruise in the Palau Regions of the Western Carolines

The Oregon sailed from Guam on April 22 for the Palaus, stopping briefly at Ulithi and Yapen route. From April 29 to May 23, she engaged in an extensive survey of the Palau region and also visited Pulo Anna, Sonsoral, Tobl, and Helen Reef, which are outlying islands extending some 350 miles to the south.

OBSERVATIONS ON BAIT: As in the Marianas, much of the time in the Palaus was taken up by scouting and fishing for bait. About 14 days were devoted to this task, which is a very short time in view of the difficulties of fishing in a new region.

One and a half days of scouting around Ulithi Atoll revealed only a few schools of fish about one inch long. However, the natives told us the Japanese had taken bait there, so we can assume that some bait may be found at times.

A half day of scouting in the harbor at Yap revealed no bait at all, and so little fish life that further scouting was abandoned.

The abundance of bait in the Palaus was in market contrast to Yap or Ulithi. It was immediately obvious that bait fish were plentiful. Schools of 2- to 5-inch fish, amounting to a few scoops, or several hundred scoops, could be found along much of the tortuous shore lines of the many islands between Peleliu and Koror. Jagged rocks, undercut limestone cliffs, and coral limited the seining areas. Sea urchins were also a definite hazard to seining. In some spots, there are thick clusters of a small species with long sharp spines that can inflict painful wounds. Nevertheless, schools of bait can be found and seined on numerous small sand beaches scattered throughout the islands. The bait fish were a species of the silverside family, like the Hawaiian iao, 2½ to 5 inches long, a flat herring of about the same size, and a smaller round herring. Natives of Koror told us that the silverside was "number two bait" for the Japanese. "Number one bait" was apparently a small translucent anchovy, but we did not find any of these.

The silverside was the most common bait along the beaches and cliffs, and it was the only species caught by us in important quantities. The little round herring seemed to prefer deeper water, and was more commonly caught under a light set over the stern of the Oregon. The preset net, described before, was used to catch them. No large hauls were made, but 15 to 30 pounds were collected on several occasions. The little round herring lived for several days in the bait tank, but we never had enough to make a thorough test of its durability.

The flat herring were very wild and they would dart under and around a seine or, when once surrounded, they would jump over the cork line. Sometimes the air was full of leaping fish. The silversides were wild too, and very good at finding holes under a net, but they could be seined more easily than the herring. The



TYPICAL SHORE LINE SOUTH OF KOROR, PALAU ISLANDS. BAIT FISH WERE SEINED ON THIS SAND BEACH.

most successful method seemed to be to use stealth in setting a fairly long seine around a school (preferably over a sand beach) closing all means of escape before the school became alarmed. In order to do this, men must work in the water and use faceplates or goggles

to hand-work the lead line over or around snags, but this is no hardship in the 80° F. to 82° F. water.

A typical West Coast bait lampara net did not prove successful, but further trials might be worthwhile. We got a few round herring in a lampara in deep water off Malakai wharf, but they gilled in the $\frac{1}{2}$ -inch stretch mesh of the bag, so if a lampara is used it should have finer mesh.

In spite of the fact that bait was plentiful, catching enough to fill the Oregon's tanks was not easy. A discouraging number of blank or nearly blank hauls were made, and difficulties were experienced in keeping the fish alive. On one occasion (May 12), about 65 scoops of silversides in the aft tank started dying suddenly about 12 hours after they were put in the tank. The cause of this mortality could not be determined. Most of the dying fish had "red noses," which may have resulted from their habit of pushing against the web while the seine is being dried up. These particular fish were from a set made with a Galapagos net of relatively hard web and fished like a beach seine.

The after bait tank was the one in which iao from French Frigate Shoals suffered heavy losses (see activities at French Frigate Shoals and Line Islands), but the intake screen had been altered on May 6 from a single large vertical slot to a diffusion chamber with many slots extending along the base of one side. Conditions in the tank, by themselves, could not have caused all the loss because another batch of silverside lived fairly well in it, without any further alterations in the tank or any changes in the volume of water pumped.

The batch of bait which was held most successfully was "made" on May 16, north of Eil Malk, Palau. On this day, 130 scoops of medium-sized (about 4") silversides were taken in four sets. A "Hawaiian net" was used. This was 40 fathoms by $1\frac{1}{2}$ fathoms of woven or blanket mesh, $1\frac{1}{5}$ -inch square (5 meshes to the inch).

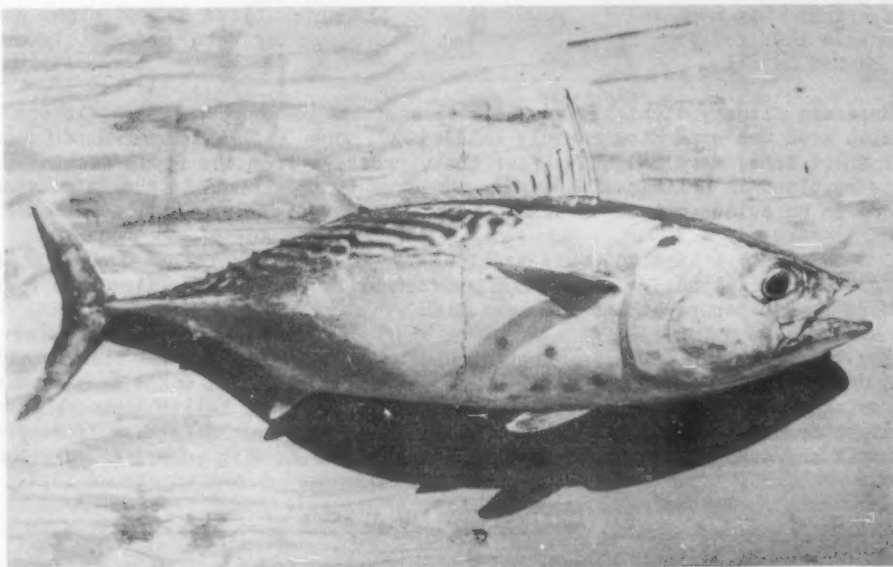
The 130 scoops were divided between all tanks, 40 going in the brine well, 70 in the forward tank, and 10 in the after tank. The 10 put in the aft tank were the last fish scooped from a receiver. Partly because of choppy seas, this batch had rough handling in the receiver and, for this reason, they were isolated in the

after tank. Therefore, it was not surprising to find about half of them dying at 2:00 A. M. on the next morning. The rest of the bait continued to live well with an estimated mortality of about 10 percent daily. It was taken on the scouting trip to Helen Reef, and the last few scoops were dumped on June 2, about 2 days from Wake Island. It had been fed only 2 or 3 times, and much of it had been used up for chum.

As a result of the Oregon's explorations on the bait situation, it can be said that bait is plentiful in the Palaus, though it is difficult to catch. At least two kinds of bait fish, the silverside and the round herring, can be kept alive in the tanks of a modern tuna clipper. The Japanese at Saipan used bait tanks which depended upon holes through the hull for circulation of water and, with these tanks, they could not keep bait alive overnight.^{4/} Natives at Koror reported that the Japanese used the same method in the Palaus.

The natives at Koror also reported that the Japanese used several bait-catching boats to supply bait to fishing boats, and that bait was held for several days in an enclosure from which the fishing boats were supplied. If large tuna clippers are to operate in the Palaus, this might be the best way to solve the bait problem.

OBSERVATIONS ON TUNA: About 11 days were spent scouting for tuna in the Palau region, including a trip southward to Sonsoral Island, Pulo Anna, Tobi, and Helen Reef. During this short period, 23 schools of fish were seen under birds, and 14 of these could be identified either by a good view of the fish or by actually bringing a few on deck. There were seven schools of oceanic skipjack, five of



BLACK SKIPJACK OR BONITO, EUTHYNNUS YAITO. FRENCH FRIGATE SHOALS.

big-eyed tuna, one of mixed oceanic skipjack and big-eyed tuna, and one of black skipjack. (Specimens from some of these schools have been preserved and exact identification awaits further study.) In addition, there were signs of many more;

^{4/}See footnote on page 8.

that is, flocks of birds were seen that may have been over fish. About 20 such flocks were seen, but an accurate record was not kept because small groups of birds would usually be in sight all the time the vessel was running along the reefs. Tuna seemed to be most abundant along the southeast side of the Palaus and around Helen Reef. Very few signs of fish were seen on the northwest side of the Palaus.

Bait was tossed at most of the identified schools, as well as under some birds when fish were not seen. The bait (mostly silversides) behaved very well, forming little schools and following the vessel. In one case, a little school of bait came up under the counter and was dipped up with a scoop and used again. The tuna and skipjack took the bait, but all of the fish seen were very wild and erratic, so we never landed more than a few specimens from any one school.

Both at Koror and at Sonsoral, the natives volunteered the information that tuna did not bite very well during May because that was their spawning time. The natives at Koror also said that Japanese skipjack boats did not go out in May, for the same reason. The large individuals of both big-eyed tuna and oceanic skipjack collected were either in or very close to spawning condition, which would seem to confirm the natives' reports.

There is some indication that the Japanese tuna and skipjack fishery in the Palau Islands extended well south of that group. Natives at Sonsoral, Pulo Anna, and Tobi Islands reported that Japanese fished around those islands, and on the one small sand spit island at Helen Reef we discovered a ruined building that may have been used to smoke fish for fish sticks or "katsuobushi." Under the wreckage of the building, we could see three or four brick oven-like fireplaces with iron doors and iron gratings. It appeared as though this little uninhabited island might have served as a base for fishing boats working in surrounding waters, possibly even south to New Guinea.

Japanese fishery statistics^{5/} indicate that the Japanese skipjack fishery in the Palau area was expanding rapidly until 1937, when 13,774 metric tons (about 15,051 short tons) were caught. After that, pressure from the rival fishing interests resulted in a limitation on the number of boats allowed in the Palau area, so there is no evidence that the limit of profitable production had been reached.

CONCLUSIONS: A tuna and skipjack fishery probably can be developed in the Western Caroline Islands. Our only information as to the possible size of a fishery there is the report of the Japanese fishery.

The type and size of vessel that should be used to develop the fishery will depend on the logistics of the area. A relatively small vessel would seem to have an advantage in coming in close to the bait grounds, but a larger tuna clipper-type might be necessary if the fish must be carried outside the Palaus. If sampan-type boats are used, they should have bait tanks provided with pumped circulation.

EXPLORATIONS BY MV ALASKA

Marshall Islands and Eastern Carolines Cruise

The Alaska left Honolulu on January 17, followed the Hawaiian chain of islands to French Frigate Shoals, then proceeded southwesterly, arriving in the Marshall Islands on January 29 when Milli Atoll was raised. From Milli, she scouted northward to Kwajalein, then southward again to Ebon. From Ebon, she headed for Kusai, 5/Japanese Tuna Fisheries, Fishery Leaflet 297, Fish and Wildlife Service.

the most eastern of the Caroline Islands, and then worked westward from island to island reaching Truk on February 19. The waters around Truk, including Kuop, Nama and Losap, were scouted fairly thoroughly during the next three weeks. Leaving Truk on March 12, she then headed southward to Kapingamorangi and then back to Honolulu by way of the Ellice, Phoenix, and Line Islands, arriving at Honolulu April 10.

OBSERVATIONS ON BAIT: Since the Alaska was not immediately concerned with bait, there was no special effort to scout for it. In general, cursory examinations of beaches through the Marshalls and eastern Carolines indicated that bait was not abundant. Schools of flat herring, 3 to 5 inches long, were seen at Ailinglaplap in the Marshalls and at Truk in the Carolines, but judging by the Oregon's experience with herring in the Palaus (see p. 13), these might be difficult to catch. Marshall Islanders told us that the Japanese found plenty of bait at Jaluit, but the supply was limited at Ailinglaplap. In the eastern Carolines, the natives told us the Japanese found bait at Losap and Satowan, south of Truk.



TYPICAL MARSHALL ISLANDS OUTRIGGER CANOE OFTEN USED TO TROLL FOR TUNA AND SKIPJACK.

OBSERVATIONS ON TUNA: Very few fish were seen during the Alaska's cruise, and no attempt was made to make a set. Only two schools of fish that may have been tuna were sighted in the Marshalls and four in the Carolines. None of these was large and the fish were not seen closely enough to permit identification. Six schools that appeared to be skipjack were sighted south of the Equator on the run through the Ellice and Phoenix Islands. One school was seen near Palmyra. However, the fact that very few tuna schools were sighted by the Alaska does not prove that tuna might not be found in commercial quantities. From records of the Japanese fishery^{6/} and from biological work done under the auspices of the Navy at Bikini in the Marshall Islands, it is known that yellowfin and skipjack schools occur in commercial quantities in Micronesia at certain seasons. About 15,000 tons of skipjack were caught in the vicinity of Truk, Panape, and Jaluit in 1937.^{6/}

The natives were interviewed on fishing methods and seasons at almost every island visited. In all, 21 interviews were secured from 14 widely separated islands. The reports were almost unanimous in agreeing that January, February, and March were poor months for tuna fishing. Almost all agree that May, June, July, and August were the best months. The disagreements as to April and the fall months

^{6/}Fisheries of Former Japanese Mandated Islands, Fishery Leaflet 273; Japanese Tuna Fisheries, Fishery Leaflet 297; Fish and Wildlife Service.

might indicate a natural variability in the date of starting the season and a gradual decline in availability of fish towards its close. Apparently, a few tuna could be caught by trolling at any time of year.



AT LOSAP, SOUTH OF TRUK. THE ISLAND CHIEF COMING OUT TO MEET THE ALASKA.

in the lee of some of the atolls. The steady northeast trade winds were usually estimated as blowing at Beaufort force three or four and sometimes five. However, that does not necessarily mean that a purse seiner could not work in that area. The natives in the Marshalls reported that the weather was unusually windy during the Alaska's visit. Also, according to Pilot charts of the Hydrographic Office, the northeast trade winds are less strong during the summer months.

CONCLUSIONS: It seems obvious that the Alaska's exploratory cruise was made at the wrong time of year, both for tuna and for weather. It may be possible to develop a tuna fishery in the Marshalls and eastern Carolines, but it probably will be limited to the late spring and early summer months. The Japanese fishery provides the only clue as to the possible productivity of a tuna and skipjack fishery in eastern Micronesia.

Occasionally, the natives could tell us something about the extent of the Japanese fishery. At Jaluit, the natives said the Japanese operated a mothership and 6 to 10 boats in the vicinity. They also caught bait there for fishing around Milli Atoll and Killi Island.

At Kusai, the natives reported that the Japanese had an ice plant that served as a receiving station.

In the region south of Truk, the Japanese were reported to have operated a mothership and a fleet of sampans. Twenty sampans and a tender were reported as fishing around Losap and, apparently, the fish were taken to Satawan where a mothership was operated. The natives gathered wood for the mothership, which may indicate that at least some of the catch was smoked.

During most of the exploration of the Marshalls and eastern Carolines, the weather was too rough for purse seining, except, possibly,



E VALUE RATIOS FOR SOME COMMERCIAL VITAMIN A OILS

By F. B. Sanford* and D. T. Miyauchi**

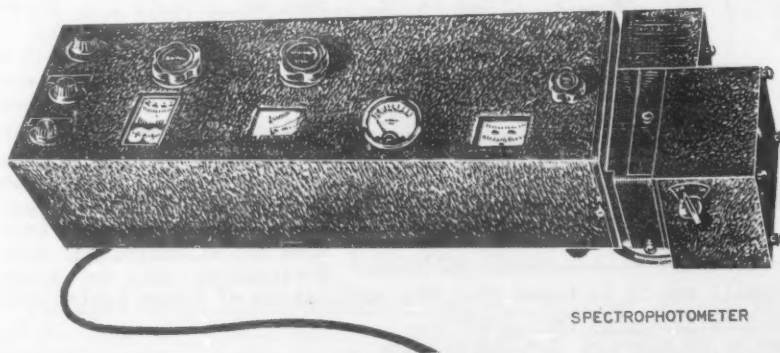
ABSTRACT

The determination of vitamin A in fish liver oil by means of ultraviolet light absorption has resulted in a considerable reduction in the lapse of time between the delivery of livers containing the oil and the receipt of payment for them by the fishermen. If the amount of light absorbed at one given wavelength is divided by the amount absorbed at another wavelength, the result will be a ratio characteristic for the substance. Each substance has its characteristic ratios just as each individual has characteristic fingerprints. There are constituents other than vitamin A which affect these ratios, and cause a variation in the assay of the oils. These variations are of practical concern and an effort is being made to gather data on them. The data available at the present time is summarized in this paper.

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The official method for the measurement of vitamin A is impractical for everyday use. The method is based on the growth response of rats and requires several weeks to complete. Not only is the method time consuming, but it is expensive and can be used only where the material to be assayed is of considerable value. A further criticism of the official method is that it does not have the precision demanded by the trade.

The vitamin A industry would be in a chaotic state due to the inadequacies of the official method were not alternative methods of measuring vitamin A available. These alternative methods are physicochemical in nature. The most convenient is one which measures the amount of ultraviolet light absorbed by a solution of the vitamin. This method is rapid; a determination can be made in only a few minutes and, in addition, the results are closely reproducible. The spectrophotometric instrument used in this method has now been developed to such a point that independent laboratories can duplicate results to within one percent.



SPECTROPHOTOMETER

While the reproducibility of the ultraviolet method is high, its reliability is difficult to determine because substances other than vitamin A also absorb ultraviolet light. If these non-vitamin A substances are present along with vitamin A, the extra light absorbed by these materials will give an erroneously high

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measurement. It is for this reason that the ultraviolet method has not as yet been made official.

However, while the non-vitamin A substances absorb ultraviolet light, they do not absorb it in exactly the same way that vitamin A does. In fact, each substance absorbs light in a manner which is peculiar to that material and if a graph is made of the amount of light absorbed by the material at various wavelengths, a characteristic pattern will be obtained. Similarly, if the amount of light absorbed at one given wavelength is divided by the amount absorbed at another wavelength, a ratio will be obtained which is characteristic for the substance. That is, each substance has its characteristic ratios just as each individual has characteristic fingerprints.

Chemists have come to recognize that these ratios give an indication of the reliability of the vitamin A estimations made by the ultraviolet absorption method. Vitamin A dissolved in the solvents commonly used for the purpose absorbs maximally in the neighborhood of 328 mμ. and it is now customary to use the ratios of the light absorbed at 300 mμ. and 328 mμ., and at 350 mμ. and 328 mμ. These ratios can be represented symbolically as $\frac{E_{300}}{E_{328}}$ and $\frac{E_{350}}{E_{328}}$ where E_{λ} is the coefficient of absorption.

In the case of a pure substance, the E value ratios determined for one sample will be the same, within the limits of experimental error, for all other samples. In the case of natural products such as soupfin shark liver oil, the oils contain constituents other than vitamin A and the proportion of these vary from one sample to another. As a result, the E value ratios are likewise variable.

Table 1 - E Value Ratios ^{1/}				
Type of Vitaminiferous Material	Number of Samples	Value	$\frac{E_{300}}{E_{328}}$	$\frac{E_{350}}{E_{328}}$
Halibut Liver Oil (<i>Hippoglossus hippoglossus</i>)	71	Lowest Highest Average Standard Deviation	0.570 0.646 0.602 0.0177	0.576 0.755 0.663 0.0272
Sablefish Liver Oil (<i>Anoplopoma fimbria</i>)	18	Lowest Highest Average Standard Deviation	0.585 0.648 0.614 0.0214	0.574 0.688 0.643 0.0274
Male Soupfin Shark Liver Oil (<i>Galeorhinus zyopterus</i>)	73	Lowest Highest Average Standard Deviation	0.563 0.741 0.669 0.0309	0.550 0.592 0.570 0.0096
^{1/} These data were taken by means of the Beckman spectrophotometer employing a tungsten light source. Isopropanol was the solvent.				

place eventually and it is hoped that the publication of these tables will help to bring this about in the near future.

^{1/} E is defined by the equation: $E = (\log I_0/I)/cx$

Where c is the concentration, x is the length of the absorption cell. I_0 is the intensity of the incident light. I is the intensity of the emergent light.





January 1949

Boston, Mass.

Morphological, cultural, and physiological studies of the bacterial cultures isolated from fresh fish were conducted. Of the cultures tested, the rod forms constitute 76 percent of the total and the cocci the other 24 percent. Of the rods, 41 percent are Gram +; 11 percent, Gram -; and 24 percent, Gram variable.

* * *

The salt determinations made on frozen haddock, rosefish, cod, pollock, and hake fillets showed a greater amount of salt in the fillets from fish frozen at sea than in the fillets from fish iced at sea, thus probably accounting in part for the "sea-salt" flavor of the former. The fillets from fish frozen at sea are considerably more firm, but have a drip in the same range as the fillets from fish iced at sea.

College Park, Md.

Tests of 200 samples to date show very little indication that storage of frozen mackerel fillets at fluctuating temperatures has any marked effect on their acceptability. This appears to be the case with a test, now completed, of one group of fillets undergoing 4-day changes in temperature for 4 months of storage, and with other groups under test. The quantity of "drip" upon thawing showed very little change for all samples.

Ketchikan, Alaska

Tests conducted indicate that when clams are steamed at 15 pounds pressure to open them, the drained weights of the canned product are equal to or more than the original weight of the meats packed. Rather than shrinking, the meats seem to absorb some of the liquor.

Seattle, Wash.

Packaged frozen split rockfish fillets were examined after 55 weeks of storage at 0° F. Control fillets which had been prepared and packaged in the commercial manner were extremely discolored, very rancid in the surface fatty flesh, and inedible. Fillets in which either 1/10 or 1/5 inch of outside fatty flesh had been removed by a slicing machine before packaging were edible, but of poor quality. There was no difference in the quality of fillets from red or yellowtailed rockfish species at this examination. The edibility of the split rockfish fillets was limited mostly by development of a tough texture, discolorations of the surface flesh, and noticeable off-flavors. The maximum storage life of the regular

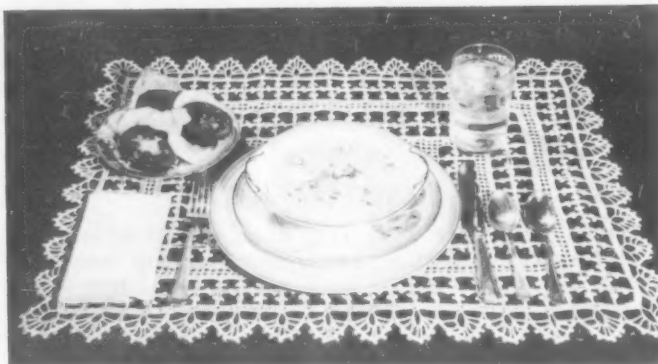
or uncut fillets was less than 22 weeks for yellowtailed rockfish, and approximately 50 percent longer for red rockfish. The maximum storage life of the split rockfish fillets from either species was greater than 55 weeks. The acceptability of these latter fillets would be limited more by the undesirable texture changes than by the flavor changes, as was the case of the regular or uncut fillets.

* * *

Samples of vitamin oils sent out by the U.S.P. Review Committee for collaborative study were analyzed. Measurements were made at 20 different wave lengths on 9 vitamin A oils, in duplicate. Calculations were made in connection with applying the "Morton Stubbs' Correction."



NEW ENGLAND CLAM CHOWDER



- | | |
|------------------------------|------------------------|
| 1 quart shucked clams | 2 cups potatoes, diced |
| 6 tablespoons bacon or salt | 1/2 teaspoon salt |
| pork, diced | 1/8 teaspoon pepper |
| 1/2 cup onion, chopped | 2 cups milk |
| 2 tablespoons flour | chopped parsley |
| 2 cups clam liquor and water | |

Drain the clams, saving the liquor, and chop. Fry bacon until crisp, add onion, and brown slightly. Add flour and stir until well blended. Add chopped clams, liquor, water, potatoes, and seasoning. Cook until potatoes are tender, about 10 minutes. Add milk and heat. Sprinkle finely chopped parsley over the top and serve hot. Serves 6.

One pound of fillets or dressed fish may be used in the above recipe in the place of clams for a fish chowder.

TRENDS AND DEVELOPMENTS

Additions to the Fleet of U. S. Fishing Vessels

A total of 49 vessels of five net tons and over received their first documents as fishing craft during December—6 less than the previous month and 15 less than in December 1947, according to the Bureau of Customs of the Treasury Department. Louisiana and Florida led with 9 vessels each, while 7 vessels obtained documents in Washington. A total of 1,183 vessels received their first documents as fishing craft during 1948 compared with 1,300 during 1947. The South Atlantic and Gulf area led with 541 vessels in 1948 followed by the Pacific Coast area with 347 vessels.

Vessels Obtaining Their First Documents as Fishing Craft, December 1948					Vessels Obtaining Their First Documents as Fishing Craft, 1936 to 1948, Inclusive			
Section	December		Year		Year	Number	Year	Number
	1948	1947 ^{1/}	1948	1947 ^{1/}				
	Number	Number	Number	Number				
New England	3	5	52	55				
Middle Atlantic	-	3	40	64	1936*	435	1943	358
Chesapeake Bay	3	7	59	83	1937	335	1944	635
S. Atlantic & Gulf	30	34	541	486	1938*	376	1945	741
Pacific Coast	11	14	347	415	1939	357	1946	1,085
Great Lakes	5	3	51	45	1940	320	1947	1,300
Alaska	4	6	81	123	1941	354	1948	1,183
Hawaii	3	2	12	28	1942	358		
Puerto Rico	-	-	-	1				
Total	59	74	1,183	1,300				

^{1/}Revised.

Note: Vessels have been assigned to the various sections on the basis of their home port.

*Data are partly estimated.



Albatross III

FURTHER INVESTIGATIONS ON USE OF LARGER MESH NETS: The work of the Albatross III, on Cruises 15 and 16, January 10-13 and 17-19, 1949, was to investigate further the use of larger mesh nets or savings gear. The double trouser trawl was used on all the tows in this series. This net is an adaptation of a 1½ Iceland trawl and has four regular-sized cod ends in place of the one in an ordinary net. During these cruises, two cod ends of regular commercial mesh and two cod ends of 4½-inch savings mesh were used.

Data on the number of fish entering each of the four cod ends and the size of the fish of all species in each bag were obtained by the investigating scientists. These data and those from future experiments will be used to determine the size and number of fish of the various kinds which escape through the net and

may be the basis for recommendations on the size of net to be used to conserve young fish of the commercially-important species.

The completion of these cruises brings to an end the work of the Albatross III for about four months, until some time in the spring, due to the shortage of available operating funds. The vessel will be tied up at its home port--Woods Hole, Mass.



Consolidation of Education and Market Development Sections

Effective February 14, the Education Section and the Market Development Section of the Branch of Commercial Fisheries were combined into one section. This section will carry on the duties and functions of both Sections and will be called, tentatively, the Education and Market Development Section.

The Sections were combined in order to conduct fishery educational and market development work more effectively, eliminate any possibility of duplication, make better use of the funds available in view of increased operating costs, and eliminate some confusion in the minds of the industry and others as to the difference between the activities of the two Sections. At an advisory meeting in the fall of 1948, it was suggested by a group of industry representatives that combining the two Sections be considered.

With the two Sections united, it appears that a better distribution of personnel can be obtained and there will be closer contact with the fisheries outside of Washington. It is also expected that all activities conducted will be benefited through closer coordination.

The new Section will be headed by Donald Y. Aska, formerly Chief of the Education Section. His assistant chief will be Arthur M. Sandberg, formerly occupying the same position in the Market Development Section. Ralph Russell, former Chief of the latter Section, is being assigned a specific field of activity in the new Section. He will be responsible primarily for Quarterly Marketing Outlook reports and similar reports issued on a monthly basis. This type of information is of considerable importance to the fisheries and is frequently requested by trade associations, Government agencies, fishery enterprises, and allied interests, such as banks and other financial institutions. Heretofore, this information has been supplied in part by the Statistical, Market News, and Economics Sections. Hereafter, a Marketing Outlook Report, combining marketing information from the three Sections mentioned, as well as the new Section, will be prepared each quarter by Mr. Russell. Other units in the new Section will continue the program adopted for the current fiscal year.



Discussions and Resolutions of Pacific Marine Fisheries Commission

MEETING HELD AUGUST 17-18, 1948: At a meeting of the Pacific Marine Fisheries Commission held August 17-18, 1948, at Bellingham, Wash., discussions took place and resolutions were passed regarding sardines, otter-trawl fisheries, tuna, salmon,

soupfin shark, and effects of water-use projects on the conservation and maintenance of the anadromous fisheries resources of the Pacific Coast. Summaries of the more important discussions and the resolutions adopted follow:

Otter-Trawl Fisheries: The biologists of the three States and British Columbia reported that no appreciable progress had been made in securing additional information relative to the proposed minimum size regulation of 5 inches for otter trawls. Considerable numbers of flatfish were tagged off the coast for racial and migration studies, and the log-book program was proceeding at a good rate. The consensus of all present was that it would be difficult to propose any concrete recommendations based on the limited amount of data available.

The Commission passed the following resolution in regards to the otter-trawl fishery:

That the biologists working on the trawl fishery continue their studies in the respective States and be prepared to give a progress report at the next meeting, also specific recommendations, if any are in order.

Salmon: Following a discussion on the offshore salmon problems, the following recommendations on salmon were agreed to by all present:

That for the present, the Commission was not in a position to offer any definite recommendations. The technical staffs were instructed to continue their investigation and to hold a conference to which Canadian and Alaska representatives should be invited to discuss the offshore salmon fishery, including purse seining, of the entire Coast.

Sardines: A report on the meeting of the sardine biologists held in San Francisco in the early summer of 1948 was presented. The biologists, according to the report, were unanimous in their opinion that management of the pilchard fishery along the Pacific Coast should be started at the very earliest possible time, and it was agreed that controlling the total take would be the best method. The amount of quota to be set for the coming lean years was recommended at between 50,000 and 100,000 tons, with the majority stating that a quota of 50,000 tons might be necessary at the start to get the pilchard industry back on the upgrade. The allocation of the quota was to be 90 percent to California and the other 10 percent to Oregon, Washington, and British Columbia.

The following resolution on the sardine report was passed by the Commission as a whole:

That the sardine report submitted for the biologists be received without approving or disapproving, that its subject matter be submitted to the advisory committees of the three States and the British Columbia authorities and industry for formal action and these groups to report back at the next Commission meeting with definite suggestions. Also as a matter of general information, but not to be acted upon formally, the report be submitted to the Fish and Wildlife Service, the Scripps Oceanographic Institute and any other interested agencies as the chairman may determine.

Soupfin Shark: After the presentation of reports and recommendations by the three States, as requested at the previous meeting of the Commission, and following a discussion, the following resolution was unanimously adopted in regards to the soupfin shark fishery:

That the Commission go on record to the effect that it believes the depletion of the soupfin shark resources has proceeded past the danger point, that management is necessary immediately, and that the following minimum regulations are necessary:

1. Protection be given the soupfin shark on the nursery grounds;
2. "Diver" nets be prohibited following a time interval for the using up of those nets now in possession or operation;
3. Serious consideration be given to the prohibition of drift-nets, or at the very least the minimum mesh sizes be increased;

That the details of these proposed regulations be worked out by the research staffs and the industry advisory committees well in advance of the date of the next Commission meeting;

That at the next Commission meeting this matter and concurrent proposals be prepared for presentation to the three States; and

That representations be made to the proper Canadian and Mexican authorities by this Commission to ascertain their feelings on the subject.

Tuna: After a discussion that followed the presentation of reports on the work done by the various States represented in regards to the tuna fisheries, the Commission unanimously adopted the following resolution:

WHEREAS, There is a small amount of money available for the research activities of the three Pacific Coast States in the albacore and tuna fisheries, and WHEREAS, Proper research requires a survey of almost all the North Pacific area and none of the States can justify an expenditure adequate to so broad a field of research, and WHEREAS, a start must be made in the proper direction in the matter of this important fishery; Now, Therefore be it Resolved, That this Commission recommend to the several States signatory to the Pacific Fisheries Compact and to their proper fisheries bodies that the first matter for research for which the money allocated for tuna fishery research be expended shall be the question of whether or not the Albacore of the North Pacific is one population, And Be it further resolved, That this Commission go on record requesting the Congress of the United States to extend the provisions of the Farrington Act to enable the Fish and Wildlife Service to extend their research into areas in which the albacore are abundant to enable this matter, as well as other matters of importance to the albacore fishery, to be correlated and carried on with adequate staff and adequate physical property.

Effects of Water-Use Projects on Fisheries: In regards to the effects of water-use projects on the conservation and maintenance of the anadromous fisheries resources of the Pacific Coast, the Commission unanimously adopted the following resolution:

WHEREAS, The Pacific Marine Fisheries Commission is composed of the official representatives and agencies of the States of California, Oregon and Washington, charged and concerned with the conservation and regulation of the marine and anadromous fishes of the Pacific Coast States, and

WHEREAS, This Commission is vitally concerned with and actively studying the effects of various water-use projects on the conservation and maintenance of the anadromous fisheries resources of the Pacific Coast States, and

WHEREAS, At the present time it is the policy of the Corps of Engineers and the Bureau of Reclamation to make public statements to the effect that the fisheries resources will not be adversely affected by the proposed multiple water-use projects in spite of a complete lack of knowledge regarding the subject by these construction agencies; Now

THEREFORE BE IT RESOLVED, That the Pacific Marine Fisheries Commission requests both of these Federal agencies to desist from making premature statements regarding the success of fish salvage programs, since it is the prerogative of the properly constituted fisheries authorities to make the decisions regarding the effects of the individual projects on the maintenance and successful salvage of the anadromous fisheries resources involved.

MEETING HELD DECEMBER 7-8, 1948: A meeting of the Pacific Marine Fisheries Commission was held on December 7-8, 1948, at Portland, Ore. The following is a summary of some of the discussions and of the resolutions adopted:

Salmon: Following a discussion that followed the presentation of reports on the troll salmon fishery, the Commission made the following resolution:

That no chinook salmon less than 26 inches in length be taken by trollers; that no chinook salmon be taken by other forms of gear; that the chinook salmon season be from March 15 to December 31; that any State may declare a shorter season within the dates specified above; and

Further, that a silver salmon open season be established from June 15 to October 31.

No size limit was recommended on silvers. A proposal for a 22-inch limit was dropped.

Soupfin Shark: After a discussion of the soupfin shark problem, the Commission adopted the following recommendations:

The issuance of revokable licenses to boat operators, processors and all others engaged in the soupfin shark fishery; prohibiting the sale of female livers and providing that evidence of sex be retained with each liver; abolishing fishing within a 25-fathom curve; establishment of a minimum 9.5-inch mesh size for nets; and that a uniform tagging system be submitted.

The above proposed regulations were to be submitted to the legislature of all three Pacific Coast States in January 1949.



ECA Procurement Authorizations for Fishery Products

During February 1949, the Economic Cooperation Administration announced, among the procurement authorizations for commodities and raw materials, a total of only \$415,000 for the purchase of fishery products.

In addition, ECA announced, during February, several cancellations of procurement authorizations for salt fish due to a shortage of this product, and the inability of the countries involved to complete delivery within the time limit.



The cancellations included two authorizations totaling \$1,655,000 for the purchase of salt fish in Newfoundland and two totaling \$575,000 for the purchase of salt fish in Canada. Both of these purchases were for delivery to Italy during the Fourth Quarter 1948 and the First Quarter 1949.

On February 8, the ECA announced a reduction of \$133,000 in an authorization of \$814,000 announced on November 4, 1948, for the purchase of whale oil in the United States for delivery to Netherlands during the Fourth Quarter 1948. This reduction does not represent a decrease in tonnage required, but rather a decrease in the value of the tonnage authorized for purchase.

ECA Procurement Authorizations for Fishery Products, February 1949

Product	Country of Origin	Procuring Agency	Recipient Country	Amount Authorized
Fish, canned ^{2/}	U.S. & Possessions	Italy	Italy	\$ 400,000
Oil, fish	U.S.	France	French Zone Germany	15,000

Total ECA Procurement Authorizations for Fishery Products, April 1-February 28, 1949

Fish, canned	U.S.	Greece & Italy	Greece & Italy	1,078,000
Fish, salted	Newf. & Canada	Italy & Fr. W. Indies	Italy & Fr. W. Indies	5,179,000
Fish meal	Canada, Iceland, Norway & Angola	Denmark, Austria, & U.S. Dept. Army	Denmark, Austria, & Bizonia	3,457,361
Oil, herring	Iceland	U.S. Dept. Army	Bizone Germany	1,694,000
" , seal	Newfoundland	France	France	257,600
" , shark liver	Latin America except Argentina & Brazil	France	France	250,000
" , fish	U.S.	France	Fr. Zone of Germany	15,000
" , technical fish	U.S.	U.S. Dept. Army	Bizone Germany	100,000
" , whale	Netherlands, Belgium, Norway & U.S.	Austria & U.S. Dept. Army	Austria & Bizone Germany	7,059,150
Vit. A (Commercial Grade, for stock feed)	U.S.	Netherlands	Netherlands	567,000
Grand Total Authorized				19,657,911

^{1/}Where the recipient country is shown as the procuring agency, the Government of the participating country or its authorized agents or importers do the purchasing.

^{2/}Except salmon and tuna.

The total amount authorized to date for purchases in the United States and possessions is \$2,041,800.



Experimental Truck Shipment--Seattle to Chicago

For the first time in the history of the Chicago Wholesale Fish Market, so far as a search of the records discloses, motor-truck transportation of fishery products from the Pacific Coast to Chicago was attempted. Early in February, the first truck shipment from Seattle, Wash., consisting of two trucks carrying 40,000 pounds of frozen halibut and salmon, arrived in Chicago, Ill.

The receiver reported that the shipment arrived in top condition and no re-icing was necessary en route. The temperature inside the truck when it left Seattle was 0° F. and it was 10° F. on the morning of the seventh day upon arrival in Chicago.

The shipment was made to determine the feasibility of this method of transportation for fishery products from the West Coast to Chicago. Drivers of the vehicles stated that greater loads than those handled on this experimental trip could be hauled, and that re-icing would not be necessary even during the summer when temperatures were high.

It was claimed by the receiver that there was a small saving realized in actual transportation costs, and an important saving in re-icing charges.



Federal Purchases of Fishery Products

DEPARTMENT OF THE ARMY, December 1948: The Army Quartermaster Corps during December 1948 purchased 1,262,459 pounds of fresh and frozen fishery products valued at \$479,668 for the U. S. Army, Navy, Marine Corps, and Air Force for military feeding.

The revised total purchases for the year 1948 amounted to 16,495,000 pounds valued at \$5,957,000, compared with 14,058,349 pounds valued at \$4,327,431 in 1947.



Hearing on Increases of Express Ice Charges for Fish

The hearing on increases in the ice charges for fish and shellfish filed by the Railway Express Agency in ICC-I & S No. 5612 has been postponed. The Interstate Commerce Commission announced on February 17 that the hearing will be held on April 20, 1949, at Chicago, Ill., instead of March 29, the date previously scheduled.



Herring Fishery at Stonington, Connecticut

The fishing fleet at Stonington, Conn., in December 1947, discovered that they could drag fairly close to port and catch enough herring to make it financially feasible, according to the Service's Fishery Marketing Specialist conducting the Connecticut State survey. During the months of January and February, 1948, the fleet fished for herring almost exclusively. Dealers were buying the herring and trucking it to canners as far south as Maryland. There were at least three canneries packing herring at that time. However, in December 1948, only one cannery was interested, and that one limited the amount it would take.

Because of a lack of demand and a break in the price, some herring trips were dumped late in 1948 and early in 1949.

Imports of Certain Fishery Products, 1948

U. S. Imports of Fresh & Frozen Tuna, 1948, by Countries	
Country	Pounds
Canada	220,343
Mexico	1,984,146
Costa Rica	3,058,378
Ecuador	1,003,000
Peru	484,786
Japan	2,391,911
Total	9,142,564

During the first four months of the year, canned bonito and yellowtail imports were included under "canned tuna," but for the balance of the year, the imports of bonito and yellowtail were shown separately, and totaled 270,708 pounds, or approximately 12,891 standard cases.

FRESH AND FROZEN TUNA: The imports of fresh and frozen tuna into the United States during 1948 amounted to 9,142,564 pounds. Tuna imports from Mexico, Costa Rica, and Ecuador included fish taken by American vessels, unloaded in these countries, and later shipped to the United States. The imports from Peru were entered during the last four months of the year, while those from Japan were for the months of July, August, September, November, and December.

SHRIMP FROM MEXICO: The imports of shrimp from Mexico during 1948 broke all previous records with a total of 21,477,390 pounds, or over 8,000,000 pounds' great-

CANNED TUNA, BONITO, AND YELLOWTAIL: The imports of canned tuna into the United States during 1948 amounted to 8,288,442 pounds, or the equivalent of 385,164 standard cases (48 $\frac{1}{2}$ -pound cans). The four leading exporting countries were Peru, Portugal, Japan, and Angola (Portuguese West Africa).

United States Imports Canned Tuna, Bonito, and Yellowtail, 1948, by Countries		
Country	Canned Tuna Lbs.	Bonito & Yellowtail Lbs.
Canada	7,546	-
Peru	4,681,435	225,389
Chile	10,382	39,000
Canal Zone	4,815	-
Azores	278,239	-
Portugal	1,842,059	-
Spain	15,079	-
France	11,231	-
Italy	50,403	-
Turkey	-	6,287
Fr. Morocco	6,059	-
Algeria	230	-
Libya	1,034	-
Br. East Africa ...	53,163	-
Port Guinea	57,160	-
Angola	592,308	-
U. of S. Africa....	15,496	-
Japan	645,423	-
China	16,380	-
Total	8,288,442	270,708

1/ During Jan.-Apr., canned bonito and yellowtail imports were included in "canned tuna."

Imports of Shrimp from Mexico by Customs Districts, 1947 and 1948

Customs District	1948 Lbs.	1947 Lbs.	Customs District	1948 Lbs.	1947 Lbs.
New York	25,938	25,280	El Paso	416	836
Georgia	25,600	-	Arizona	12,968,022	11,169,218
South Carolina	18,400	-	San Diego	618,460	326,325
Florida	1,271,479	146,323	Los Angeles	777,390	55,267
Mobile	-	44,842	San Francisco	77,750	-
New Orleans	1,434,526	215,971	Oregon	1,980	-
Sabine	-	53,750	Colorado	45,328	35,000
Galveston	-	14,330	Chicago	812,260	35,000
Laredo	3,399,841	1,099,343	Duluth	-	7,000
			Grand Total	21,477,390	13,228,505

er than 1947 when the imports amounted to 13,228,505 pounds. Of this amount, 6,149,846 pounds entered through ports in the South Atlantic and Gulf States and presumably came from the shrimp-fishing areas of the Gulf of Mexico, especially in the Bay of Campeche. Undoubtedly, some of the shrimp reported as entering Chicago and New York may also have come from this area.

The imports from the shrimp fishery on the west coast of Mexico seemed to be around 2,000,000 pounds greater than for the previous year.

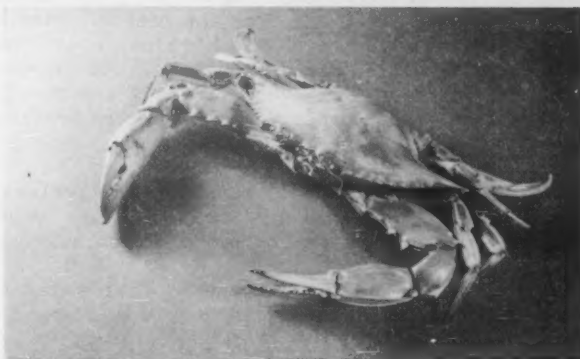


Notes on the Chesapeake Bay's Fisheries, 1948

Fisheries production during 1948 in the Chesapeake Bay (including the adjacent strip of seacoast from Virginia Beach to Ocean City) gave Maryland and Virginia fishermen record incomes, as has been the case for the preceding three or four years, according to a recent report from the Service's Fishery Marketing Specialist stationed at Weems, Va. The balance between supply and demand was, on the whole, maintained. There were no gluts to depress prices, and no scarcities except for croakers. In the summer of 1948, hook-and-line fishermen complained of the scarcity of croakers, and the fishermen are now seeking some protection for this species.

OYSTERS: There was a scarcity of oysters in certain sections of Maryland and Virginia, but the over-all production level was maintained in both States.

CRABS: There were enough crabs in the Bay in 1948 with crabbing activities about equal to preceding years. Winter crab-dredging catches were satisfactory in the Bay in the early months and unsatisfactory along the seacoast. However, in the closing months of the year, the seacoast had crabs while they were scarce in the Bay. Summer crabbing yielded a good crop. Crab-pot users increased, and Maryland decided to raise the limit of 35 pots per licensee to 50 to conform with Virginia's limit.



THE BLUE CRAB (*CALLINECTES SAPIDUS*) OF THE SOUTH ATLANTIC AND GULF COASTS, ALTHOUGH TAKEN ALL ALONG THE EASTERN SEABOARD FROM NEW YORK TO TEXAS, IS MOST PLentiful IN THE CHESAPEAKE BAY AREA.

CANNING: During 1948, canneries partially made up for the slump in the previous year occasioned by the light runs of alewives, the principal species used for canning. Packs of menhaden and whiting, canned during the war because of food shortages and later for Government purchase for foreign relief, were discontinued.

SHAD: The shad runs of 1948 showed no sign of returning to their former abundance. Prices were maintained at a profitable level for both fishermen and dealers, but the fish were all comparatively small, probably because they were first spawners. The catch, however, was slightly higher than in previous years.

FROZEN AND PACKAGED FISH: The growth of freezing and packaging fish and shellfish was almost negligible. At present, there are few Chesapeake Bay fish that produce a fillet comparable in consumer appeal to the New England species. Therefore, most frozen packaged fish are pan-dressed only. Constant experimentation continues, and one Maryland firm produced a frozen pan-dressed shad, cellophane wrapped. Reports indicate that it sold well. A Virginia firm tried brined pan-dressed alewives in 3-pound jars.

OTHER DEVELOPMENTS: A number of small developments took place. A brisk demand for dressed snapper turtle meat was built up by one Virginia firm until the supply of snapper turtles dwindled.

The catfish industry, previously confined to a small area in the James River, branched out State-wide, wherever the laws permitted commercial fishing. Groups of men with catfish pots systematically visited and fished all the available waters.

Another firm in Maryland experimented with canned smoked herring; another with scrubbed, sterilized crab shells for deviled crabs; a third with diamond-back terrapin, cooked, removed from the shell, packaged and frozen; and a fourth with smoked jumbo shrimp.

MENHADEN: The menhaden industry in Virginia concluded a profitable season even though its fleet was slightly larger and its catch slightly smaller than during the previous season. However, the competition of imported fish meal and oil and increased production and imports of competing products began to drive menhaden products to a lower price level. (See Commercial Fisheries Review, January 1949, page 28.)

OTTER-TRAWL FISHERY: For the past 20 years, an increasingly important element of the Virginia fish catch has been the otter-trawl fishery. At first, it was prosecuted almost entirely by New England interests, which today still hold a prominent position. However, Virginia and Maryland vessels have been added to the expanded fleet, and last year, a record-breaking number landed fish at Virginia ports.

FISHERY BYPRODUCTS: One canner of alewives in Virginia installed a dryer to convert cuttings into dry scrap, and one menhaden operator moved to install equipment for processing the protein-rich stickwater.

A plant for the manufacture of fish scrap and oil from fish cuttings and trash fish began operations in Maryland, making a total of two for that State.

MACKEREL GILL-NETTING: Ocean gill-netting for Boston mackerel by local fishermen increased during the year. A few years ago, these fish were caught principally by northern vessels.



Notes on Delaware's Fisheries, 1948

Although Lewes, Delaware, is one of the principal fishing ports in the nation because of the large volume of menhaden delivered to its two fish meal and oil plants, few persons know that it often ranks among the first half dozen ports in the country. In addition to its importance as a menhaden port, Lewes is the most important food fish port in Delaware, according to the Service's Fishery Marketing Specialist conducting a survey of the fisheries of Delaware. It is the only landing place for otter-trawl vessels between Ocean City, Md., and Cape May, N. J.

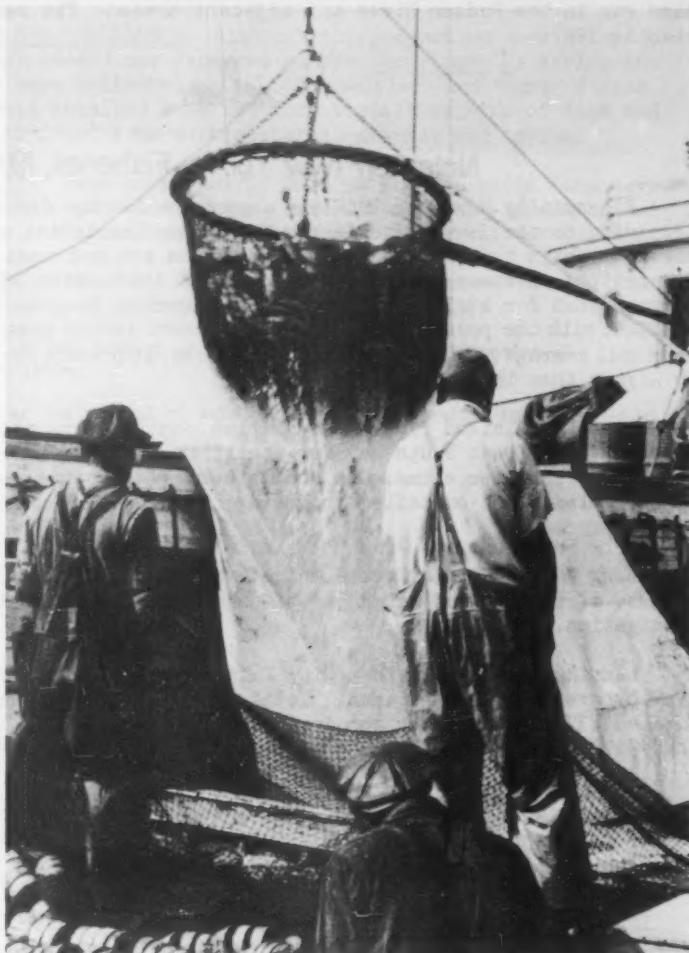
During 1948, catches from the waters of Delaware Bay were poor. Croakers were scarce, the gray sea trout (weakfish) were of very small size, white perch were not as abundant as in the past few years, and shad production was lower than in previous years; however, the catch of striped bass was good.

Notes on New Jersey's Fisheries, 1948

Except for the migratory species which provide erratic catches throughout the years, the Delaware Bay area produces consistently smaller amounts of fish each year, according to the Service's Fishery Marketing Specialist conducting a survey of the fisheries of New Jersey. However, the oyster industry shows signs of prosperity in this area with little fluctuation in production, and the crab catch for 1948 was good, following several bad years. The lower production of crabs in previous years was attributed to several severe winters. Crabbers are not permitted to use dredges and the gear generally used is trot-lines.

OTTER-TRAWL FISHERY:

The New Jersey otter trawlers land at Cape May, Wildwood, Atlantic City, Beach Haven, Barnegat City, and Point Pleasant, with Cape May, Wildwood, and Point Pleasant receiving the great bulk of the dragger catch. It was a very poor year for the New Jersey otter-trawl fleet. Catches were light for many species and no one species increased in quantity or importance. The many additions to the otter-trawl fleet increased the fishing effort in the State's waters, but not the total production.



BRAILING MENHADEN FROM NET INTO VESSEL OFF NEW JERSEY.

POUND-NET FISHERY: The pound-net fishery suffered from the effects of decrease in production and lower prices. Those in the southern part of the State felt the decline most, with the northern ocean and bay pound nets doing generally better. It is expected that there will be fewer nets set out during 1949.

POT FISHERY: Pot fishermen had an excellent season in 1948, taking large quantities of sea bass and lobsters. Some pot fishermen are concerned about the future catch of lobsters.

OTHER FISHERIES: Large schools of mackerel provided good catches for the jig fishermen. Prices were a little below those for 1947. The production of cod with baited trawl-lines during the winter season was fairly good, but prices were somewhat lower than the previous year. New Jersey took a large share of the good shad run in the Hudson River and adjacent areas. The menhaden catch was lower than in 1947.



Notes on New York's Fisheries, 1948

Financially, the year 1948 was a good one for the fisheries of New York State, according to the Service's Fishery Marketing Specialist conducting that State's survey. While the exact data on production are not available at this time, it is possible to state that the value of the 1948 catch will equal and may even surpass that for 1947. Prices paid to fishermen, in general, were somewhat higher in 1948, with the possible exception of a short period towards the end of the year. The total average price from available figures, at present, seems to have been slightly higher than in 1947.

Some Long Island fishing localities continued to show a decline in production, notably Great South Bay for shellfish and Freeport and Point Lookout areas for surf or skimmer clams. In the latter case, it was not so much the scarcity of surf clams that curtailed production, but rather the lack of demand for the canned product.

Long Island fishing vessels are having difficulties landing at certain ports because of the lack of water in the channels. This situation has been under investigation.

Landings at the New York City Fulton Fish Market in 1948 surpassed those for 1947 by over 2,500,000 pounds. Total landings in 1948 brought in by 767 trips totaled 13,727,426 pounds compared with 1947 when 11,059,453 pounds were brought in by 497 trips.



Pacific Oceanic Fishery Investigations Reports Progress

HONOLULU OFFICE: The Honolulu office of the Pacific Oceanic Fishery Investigations moved on January 17 from the Territorial Agriculture Building to the temporary quarters provided by the Navy in the Civilian Personnel Building on Kamehameha Highway. These quarters will be occupied until the proposed fishery laboratory has been completed, according to a January 1949 report from the Director of the Investigations.

RECONDITIONING AND CONVERSION OF YP-646: The reconditioning of the YP-646 has been completed and delivery of the vessel was made on January 26. At the sea trials, the main engine performed in a highly satisfactory manner and the vessel could be run at speeds approximating three knots at the extreme low setting of the controls which will permit trolling. It is now moored at a shipyard for conversion work. This vessel will be named Henry O'Malley.

RECONDITIONING OF RESEARCH VESSEL: The reconditioning and reconversion of the hull and machinery of the YP-635 as a research vessel has proceeded according to plans and trials were scheduled for about February 12. It will be named Hugh M. Smith for an early Commissioner of Fisheries.

HAWAIIAN-LINE ISLANDS RECONNAISSANCE: Although this project has been delayed, a 5-day survey trip was made aboard the Japanese sampan, Constance C., during the week of January 3-7. Data were collected relating to skipjack and "bait" fishes. In addition, statistical data obtained from the Territorial Division of Fish and Game Department are being compiled into usable charts, graphs, and tables.

STUDIES OF TUNA BIOLOGY: Some morphometric data on the yellowfin tuna have been obtained at Honolulu. Arrangements have been made for obtaining morphological measurements and weights on the tunas brought into the Otani market for auction.

TUNA LIVER MEAL PROJECT: Several lots of tuna liver meal were prepared. The tuna livers were converted to meal by three methods of processing:

- (1) Lyophilization, or the removal of moisture through its sublimation from the frozen state.
- (2) Dry-rendering, or the removal of moisture through evaporation by indirect application of heat to the material.
- (3) Acetone extraction, or the removal of oil and moisture through the solvent action of acetone.

These lots will be evaluated through chemical analyses to determine the nutritive qualities of the several tuna liver meals, including content of protein, minerals, oil, and of the several B-complex vitamins.



Proposed Indo-Pacific Fisheries Council Accepted by China and Ceylon

The Government of China, under the date of January 28, 1949, and the Government of Ceylon, under the date of February 21, 1949, notified the Food and Agriculture Organization of their acceptance of the Agreement reached at Baguio, Republic of the Philippines, on February 28, 1948, for the formation of an Indo-Pacific Fisheries Council. France, the Philippines, the United States, Siam, India, Burma, and the Netherlands also have accepted the Agreement. (See Commercial Fisheries Review: August 1948, page 17; December 1948, page 27; January 1949, page 24.)



Delegates to Inaugural Meeting of Indo-Pacific Fisheries Council

The United States Delegation to the Indo-Pacific Fisheries Council which met at Singapore on March 24, 1949, according to the State Department, were:

DELEGATE: O. E. Sette, Director,
Pacific Oceanic Fishery Investigations,
Fish and Wildlife Service,
San Francisco, Calif.

ALTERNATE William E. S. Flory,
DELEGATE: Deputy to Special Asst. to Under Secretary of State
for Fisheries and Wildlife,
Department of State,
Washington, D. C.

ADVISORS: Charles Butler, Chief Technologist,
Pacific Oceanic Fishery Investigations,
Fish and Wildlife Service,
Honolulu, Hawaii.

Dr. H. J. Deason,
Office of Foreign Affairs,
Fish and Wildlife Service,
Washington, D. C.

Dr. H. E. Warfel, Chief Biologist,
Philippine Fishery Program,
Fish and Wildlife Service,
Manila, Philippines.



Review of the Fisheries of the United States and Alaska, 1948

INTRODUCTION: During 1948, United States and Alaskan fishermen captured about 4.5 billion pounds of fish and shellfish, estimated to have been valued at over \$300,000,000 to the fishermen. The volume of the catch was almost identical with the production in the three previous years, and the average yield during the period from 1935 to 1939.

Outstanding developments during the year were the record catches of tuna and rosefish; the continued high production of menhaden; and the declines in the catches of salmon and Pacific and Atlantic mackerel. The catch of menhaden off the Atlantic Coast and Gulf States is estimated at about 950,000,000 pounds—more than twice the production of salmon, which held second place. The Pacific pilchard or sardine fishery yielded a catch of about 364,000,000 pounds, a recovery of over 100,000,000 pounds from the low level of the previous year. Pacific Coast fishermen landed about 325,000,000 pounds of tuna during the year, a new record, while the catch of sea herring on both coasts totaled about 350,000,000 pounds. Alaskan fishermen took about 166,000,000 pounds, and an additional 180,000,000 pounds were landed in Maine. The catch of rosefish totaled 241,000,000 pounds, also a new record and an increase of 95,000,000 pounds over the previous year.

PRINCIPAL PORTS: San Pedro, Calif., maintained its position as the leading United States fishing center, with total landings of about 460,000,000 pounds, valued at \$30,000,000 to the fishermen. Gloucester, Mass., was in second place with landings of 250,000,000 pounds, valued at \$11,000,000. San Diego, Calif., and Boston, Mass., shared third position, with landings of about 200,000,000 pounds each. Because of the large tuna landings at San Diego, the value of the catch at that port is estimated at \$35,000,000, while the Boston deliveries yielded fishermen \$16,000,000.

DISPOSITION OF THE CATCH: Sufficient data are not yet available to accurately determine the 1948 disposition of the domestic catch of fishery products. However, it is expected that it will be quite similar to that in the previous year,

when the catch of about 4.4 billion pounds was utilized as follows (round weight basis):

Fresh & frozen	1,695,000,000 lbs.	Cured	115,000,000 lbs.
Canned	1,275,000,000 "	Byproducts & Bait	1,315,000,000 "

CONSUMPTION: The consumption of fishery products in the United States is believed to have amounted to somewhat over 11 pounds, edible weight basis, per capita. This was above the wartime level of 9 pounds, which resulted from the allocation of a large portion of the canned pack to the armed services and to Lend-Lease distribution.

FISHING CRAFT: Nearly 1,200 vessels of 5 net tons and over were documented as fishing craft during 1948. This was about 9 percent less than the number entering the fleet the previous year, but between three and four times the number documented annually prior to 1940. In the four years ending with 1948, a total of 4,300 vessels have been documented as fishing craft. In 1940, the entire fleet in the United States and Alaska totaled only 5,562 vessels. Despite the large increase in the size of the fleet, the annual catch has remained almost identical with the prewar production. This has been due largely to the low yields of salmon in Alaska and pilchards in California.

CANNED FISH AND SHELLFISH: The 1948 pack of canned fishery products is estimated to have totaled about 750,000,000 pounds—approximately the same as in 1947, when the production totaled 754,000,000 pounds, valued at \$311,000,000. The production of canned salmon amounted to only 4,750,000 cases—nearly 1,000,000 cases less than in 1947. The packs of Maine sardines (over 3,000,000 cases) and tuna (over 7,000,000 cases) were the largest in history. The California pack of mackerel was about 550,000 cases less than the record 1947 production of 1,477,000 cases.

U. S. & Alaska Pack of Canned Fish & Shellfish - 1948 & 1947

Item	1948 ¹	1947	
	Standard Cases	Standard Cases	Value
Salmon	4,750,000	5,542,436	\$120,659,840
Sardines, Maine	3,200,000	2,834,690	27,677,704
Sardines, California	2,700,000	1,652,592	16,538,375
Tuna	7,150,000	5,894,495	90,609,175
Mackerel, California	925,000	1,477,198	12,571,059
Mackerel, East Coast	(2)	277,752	2,447,574
Alewives	(2)	139,816	779,150
Anchovies	(2)	130,119	1,377,275
Whiting	(2)	221,157	1,422,520
Clam Products	(2)	1,258,322	8,650,255
Oysters	(2)	255,414	4,259,485
Shrimp	380,000	337,381	8,192,004
Squid	375,000	221,056	898,210
Other	(2)	1,526,078	14,597,794
Total	(2)	21,868,506	310,680,420

¹Data for 1948 partly estimated.

²Not available.

FROZEN FISH: Preliminary data indicate that in excess of 290,000,000 pounds of fishery products were frozen in the United States and Alaska during 1948 by firms reporting their activities to the Fish and Wildlife Service. This was an increase of about 45,000,000 pounds over the previous year and several million pounds greater than the former record of 286,000,000 pounds established in 1945. The major portion of the increase was due to heavy freezings of rosefish fillets; which were about 25,000,000 pounds greater than in the previous year. During the early months

of 1948, stocks of frozen fish remained below those for the same period in 1947. From July on, they averaged above the holdings for the latter part of 1947. However, they were still considerably below the 1946 average for this period.

FISH MEAL AND OIL: The production of fish meal in 1948 is estimated at about 188,000 tons, the same as in the previous year, while the yield of oil is believed to have totaled about 15,000,000 gallons. This is somewhat less than the 15,900,000 gallons produced in 1947.

FOREIGN TRADE: During 1948, imports of edible fishery products amounted to 472,318,000 pounds, compared with 406,962,000 pounds in the previous year. Exports of edible fishery products amounted to only 99,765,000 pounds, less than half the 208,880,000 pounds exported during 1947. There was a large increase in the imports of groundfish, including rosefish, fillets. Total imports of these fillets in 1948 amounted to nearly 54,000,000 pounds, compared with 35,000,000 pounds in 1947, and the former record imports of 49,000,000 pounds in 1946.

PROSPECTS FOR 1949: Consumption of fishery products by United States civilians in 1949 is expected to be maintained at a high rate; however, retail prices are likely to average somewhat lower than the level prevailing in the latter part of 1948. Cold storage stocks on January 1 appear to be sufficient to meet the domestic needs until commercial fishing operations pick up seasonally in the spring. Year-end stocks of canned fish at the packer level were low; however, holdings at the wholesale and retail distribution levels are believed to be sufficient for consumer needs until the marketing of the 1949 pack begins.

The international trade of the United States in fishery products is expected to be a repetition of 1948. The relative shortage of dollar exchange and the strong desire of foreign countries for capital goods are expected to be major obstacles to any expansion of exports of fishery products. At the same time, if large amounts of fish are caught by surplus producing countries, the quantity of fish--especially fresh and frozen groundfish and rosefish fillets--shipped to the United States may be larger than in 1948.



Service Representative to Attend Conferences and Study Asian Fisheries

Continued American participation in international efforts to increase the world's food supply was demonstrated February 25 when the Director of the Service announced the departure of Dr. Hilary J. Deason, Chief of the Service's Office of Foreign Activities, on a trip that will take him to one international fishery conference and to inspections of three Asian fishing industries.

Dr. Deason arrived in Manila on March 1 for a three-week stay in the Philippines. He inspected the progress of the Fish and Wildlife Service's Philippine Fishery Program, and met with officials of the Philippine Government to discuss future program activities. He attended the inaugural meeting of the Indo-Pacific Fisheries Council in Singapore March 24-April 1 as an adviser to the U. S. delegate, and will stop in Siam, India, and Pakistan to obtain information and discuss with local officials the fisheries of those countries.

Washington and Oregon Bottom-fish Industry Production Declines

BOTTOM-FISH INDUSTRY: This industry has suffered sharply from a depressed market this winter, and local processors who fillet claim the major factors responsible are falling meat prices and imports of foreign frozen fish fillets, according to a recent report from the Service's Fishery Marketing Specialist at Seattle. The bottom-fish industry, which was given a tremendous impetus by the Government's wartime purchases of frozen fish fillets, is slowly being forced into inactivity, with several local processors withdrawing completely from handling and processing of bottom fish, and with others curtailing production awaiting further developments and future market trends.



EMPTYING A CATCH OF MIXED BOTTOM FISH FROM COD END OF TRAWL ON BOARD A VESSEL FISHING OFF THE OREGON COAST.



Wholesale and Retail Prices

The wholesale commodity index as of January 11, 1949, was 0.7 percent lower than December 14, 1948, and 3.8 percent lower than January 13, 1948, according to the Bureau of Labor Statistics of the Department of Labor. The rate of decline in foods, although not as great as the previous month, still was substantial. The wholesale food index was 2.5 percent below the previous month and 9.7 percent lower than on January 13, 1948.

Canned salmon did not follow the general trend of all foods and, during January 1949, the average wholesale price of canned pink salmon was 4.3 percent higher than December 1948 and 10.2 percent higher than January 1948. There was no change in the average price of canned red salmon compared with the previous month.

The average decline of 0.1 percent in retail food prices in mid-January 1949--the sixth in succession--brought the retail food index 5.5 percent below the July

peak and 2.3 percent below January 1948. In contrast to all foods, the fresh and frozen fish prices continued to increase to 1.5 percent over mid-December 1948 and 0.7 percent over mid-January 1948. This increase is not unusual at this time of the year due to a seasonal decline in supply during the winter months. Canned pink salmon retail prices increased 0.5 percent over the previous month and 18.5 percent over a year ago.

Wholesale and Retail Prices				
Item	Unit	Percentage change from--		
Wholesale: (1926 = 100)		Jan. 11, 1949	Dec. 14, 1948	Jan. 13, 1948
All commodities	Index No.	160.5	-0.7	-3.8
Foods	do	164.4	-2.5	-9.7
Fish:		Jan. 1949	Dec. 1948	Jan. 1948
Canned salmon, Seattle:				
Pink, No. 1, Tall	\$ per doz. cans	5.910	+4.3	+10.2
Red, No. 1, Tall	do	6.649	0	+ 4.3
Cod, cured, large shore, Gloucester, Mass.	\$ per 100 lbs.	15.375	+2.5	+ 6.0
Retail: (1935-39 = 100)		Jan. 15, 1949	Dec. 15, 1948	Jan. 15, 1948
All foods	Index No.	204.8	-0.1	-2.3
Fish:				
Fresh, frozen and canned	do	331.7	+1.1	+6.7
Fresh and frozen	do	272.4	+1.5	+0.7
Canned pink salmon	¢ per lb. can	61.4	+0.5	+18.5



A METHOD FOR EVALUATION OF THE NUTRITIVE VALUE OF A PROTEIN

Dietitians and nutritionists have more recently shown considerable interest in the effect of cooking on the nutritive value of various foods. Almost all of the early assays of nutrient elements in foods was limited to raw foods. This work is valuable in order to determine the expected variability in the amounts of nutrient elements in the raw product, but does not permit the evaluation of a serving portion in terms of the recommended daily allowances of the various nutrient elements. More emphasis should now be placed on determinations of the nutritive values of the foods as served.

Marks and Nilson (1946) reported that baking, broiling, boiling, or simmering had no adverse effect on the nutritive value of the protein of cod. Martinek and Goldbeck (1947) reported that baking at 375° and 500° F. had no differential effect on the nutritive value of the protein of croaker fillets. The methods of cooking which were chosen for these studies did not require the addition of any other products, except a light brushing of oil on the baked or broiled fish.

--Fishery Leaflet 296



Belgium

FISHERIES REVIEW, 1948: Production and Distribution: The Belgian sailing vessels usually go to sea for periods of one, two, or three weeks. Immediately after being caught, the fish are cleaned and packed in ice. After landing, the fish are sold at the big auction market at Ostend, and are distributed to the retail trade, mostly by rail.

Fresh and frozen fish are introduced into Belgium almost entirely through Ostend and Antwerp, with the Belgian catch coming mostly through Ostend, and imports passing through Antwerp, according to a January 28 report from the American Embassy at Brussels.

Several distribution services exist through which individual families and hotels throughout the country can order fish to be sent to them at regular intervals, through the Belgian railroad delivery services. However, the minimum weight of these packages is such that only large families can use these facilities.

In the Belgian long-term program prepared in connection with Marshall Plan requirements, the Belgian 1934-38 average annual production is listed at 54,000 metric tons. The 1948-49 and the 1952-53 production are estimated at 100,000 tons each (35,000 tons of herring and 65,000 tons of deep-sea fish). There seems little doubt that the Belgian fish catch will remain substantially above prewar, thereby reducing Belgian import requirements.

Imports: As compared with 69,096 metric tons of fishery products imported in 1938, Belgium imported 81,139 tons in 1947, and 40,192 tons during the first nine months of 1948 (Table 2).

	1948	1947	1938
	Metric Tons		
Herring, fresh ...	1,986	2,581	3,152
" , salted ..	6,859	5,576	10,630
Oysters	451	315	255
Mussels	12,775	12,065	10,038
Canned fish	7,522	16,673	6,757
Other	10,599	10,295	11,348
Total	40,192	47,505	42,180

fish in order to avoid paying the Benelux duty of 20 percent which went into effect on January 1, 1948.

Table 1 - Belgian Fish Catch

	Metric Tons	Value
1936-38 Average ...	39,472	\$ 4,078,916
1947	75,370	12,656,440
1948 (Jan.-Nov.) ..	57,663	9,774,793

Of the 1947 imports, 30,948 tons were of canned fish; 19,941, mussels; 12,745, fresh fish; and 9,001, salted herring.

The 1947 imports of canned fish (30,948 metric tons) were especially large and resulted in considerable stocking of canned fish in Belgium. During the last few months of 1947, Belgian importers brought in large quantities of canned

The Belgian long-term program prepared for the OEEC listed Belgian 1934-38 average annual imports at 74,000 metric tons, and estimated 1947-48, 1948-49, and 1952-53 import requirements each at 60,000 metric tons. These figures appear to be reasonable if Belgian fish production does not increase beyond current rates.

Exports: In 1937, Belgium exported 16,097 metric tons of fish, and in 1938, a total of 11,116 tons. During 1946, Belgian fish exports totaled 7,134 metric tons. During the first nine months of 1948, the total was only 6,098 tons, as compared with 17,826 tons during the corresponding period in 1947.

The normal export markets for Belgian fish include France, Switzerland, Italy, Germany, and England. Currently, fish exports to Germany, France, and England are restricted by the shortage of foreign exchange in those countries.

Consumption: Despite the fact that Belgium covers only a small area, the consumption of fresh and frozen fish is centered largely in the areas surrounding Ostend and Antwerp. In Brussels, also, there is a substantial consumption, particularly of mussels, but in the interior of the country, the consumption of fresh and frozen fish is relatively small.

Before the war, Belgian fish consumption averaged a little more than 24.2 pounds per capita per annum, based on a total disappearance of somewhat over 90,000 metric tons per year. In 1946, Belgian fish consumption was about 50 percent above prewar, at 36.1 pounds per capita. Total disappearance in 1946 was 136,196 metric tons (based on production of 69,694 tons, imports of 73,636 tons, and exports of 7,134 tons).

In 1947, consumption was somewhat below 1946, the total disappearance being 135,158 metric tons, based on production of 75,370 tons, imports of 81,139 tons, and exports of 21,351 tons. To some extent, the 1947 disappearance figure is artificially high, due to the stocking of canned fish toward the end of the year.

For the same reason, the real 1948 consumption is somewhat greater than the apparent disappearance. In reality, the 1947 and 1948 consumption were probably about the same.

Trade Agreements: The current trade agreement with Switzerland announced on October 3, 1948, for the period through September 1949, provides for Belgian exports of at least 400 metric tons of fish.

Under the current trade agreement with Germany, \$300,000 has been set aside for the purchase of Belgian herring. Although this is not a large amount, it represents at least a token shipment, and it is hoped that next year a greater amount may be taken by Germany.

Towards the middle of January 1949, an agreement was signed by the National Federation of Sea Fishing, the Federation of Coast Fishing and the Middenslagvisserii with respect to sales of spent herring to Germany. Under this agreement, the first 8.8 million pounds to be exported to Bizone Germany will be priced at 1.8 cents per pound, and the remaining 15.4 million pounds at 1.6 cents per pound, these prices to apply to exports made from the Ostend auction market. The small quantities that can be landed at the Montgomery dock at Ostend are to be exported to the Bizone at prices ranging from 1.5 to 1.7 cents per pound.

Frozen Fish and Byproducts: A modern ice, refrigeration, and fish-processing plant has been constructed in Ostend for filleting, packaging, and freezing fish.

The filleted, packaged sole and plaice are for sale to the United States, and the lower-priced fish for sale in Belgium and the Belgian Congo. It is planned to distribute storage cabinets to the important retail outlets to insure adequate handling of the frozen fish. Belgian ships with refrigeration facilities are available to transport fish to the United States and the Belgian Congo.

The ice plant has a capacity of 200 metric tons per day and the freezer is able to handle 100 tons of fish per day. The freezer equipment is of American design, of blower-type construction, and utilizes the Birdseye process. The construction has been supervised by American engineers. The plant has storage facilities for frozen fish and may be utilized for storage of frozen American salmon destined for European markets.

A fish meal plant with capacity to process 50 metric tons of offal and 30 tons of fish waste daily has also been constructed.

Canned Fish: The Belgian fish canning industry is small, consisting merely of three canneries located in or near Ostend. Their production is insignificant. Belgium imports large quantities of canned fish.

Duties on Imports: In general, the regular Benelux duties of 20 percent on all canned fish, and 25 percent on lobsters, crawfish, and shrimp apply to all Belgo-Luxembourg imports. However, by Decree appearing in the Moniteur Belge of December 25, 1948, the suspension of the duty on canned sardines and canned salmon was continued through December 31, 1949. The tariff numbers involved are sardines in oil (tariff No. 120a1) and salmon (tariff No. 120c3A).

A question has arisen with respect to the proper tariff classification for canned California pilchards. To date, the Belgian customs authorities have classed them under tariff No. 120a2 and have collected the full 20 percent tariff on them, whereas, if they were classed as 120a1, they would be exempt from duty. The Belgian customs authorities classify all sardines packed in tomato sauce as pilchards, and all sardines packed in oil as sardines. Only sardines packed in oil are thus duty-free.

Fund for Maritime Equipment and Construction: The Moniteur Belge of September 11, 1948, published a Decree of August 23, 1948, which tends to insure the development of the merchant marine, of maritime fishing, and of maritime construction and which to this end, institutes a Fund for Maritime Equipment and Construction.

Prices:

Retail Price Index (1936-38 = 100)		
Commodity	1948	
	November	December
Salmon ...	507.8	507.6
Sardines .	237.3	236.2

Retail Prices Charged for Canned Portuguese Sardines		
1/4 Club, 30 mm.	Jan. 5, 1949	Jan. 20, 1949
	Range in Price--¢ Per Can	
Packed in peanut oil	16-18	16-18
Packed in olive oil	16 1/2 and up	16 1/2 and up



Bizone Germany

FISHERIES PRODUCTION, 1948: During 1948, 597,658 metric tons of fish valued at \$58,620,000¹ were received at all ports in the Bizone. Of that amount, 17,943 tons were transshipped to Czechoslovakia, according to a January 21 report from the American Consulate General at Hamburg. In addition, 43,787 tons of fish arrived by other than sea transport. Thus, the total receipts of fish for apparent consumption in the Bizone during 1948 amounted to 623,502 tons (approximately double the receipts for apparent consumption in 1947), or 32.8 pounds per capita.² In 1938, the apparent per capita consumption of fish in Germany amounted to only 27.5 pounds.

Table 1 - Bizone Germany Fish Catch and Imports - 1948

	Hamburg, Cuxhaven and Bremerhaven				Total Receipts at Three Ports		Smaller Ports		Bizone Germany Total	
	German Landings		Imports				Landings		Landings and Imports	
	Metric Tons	Value	Metric Tons	Value	Metric Tons	Value	Metric Tons	Value	Metric Tons	Value
1948	263,951	\$25,634,400	261,804	\$25,192,700	525,685	\$48,827,100	71,973	\$9,783,500	597,658	\$58,610,700
1947	212,952	17,575,100	127,447	13,338,000	340,799	30,914,100	48,867	6,843,900	389,646	37,758,000

Of the total 1948 receipts of 525,685 tons of fish (54.2 percent above the 340,799 tons received in 1947) at the three major ports of Hamburg, Cuxhaven, and Bremerhaven, 263,881 tons, or 50.2 percent were landed by German vessels. The German trawler fleet rose to 181 vessels in 1948 (143 in 1947) as a result of repairs and reconversion of older craft, as well as new buildings. The trawler fleet expansion, together with the opening of the Norwegian coastal waters, accounted for most of the increase in German landings. Imports of fish at the three major ports increased to 261,804 tons in 1948, or 105.4 percent above the 1947 imports of 127,447 tons.

Table 2 - Fish Landings at Hamburg, Cuxhaven and Bremerhaven, by Type of Vessel and Grounds - 1948

	1948			1947		
	No. of Trips	Quantity	Value	No. of Trips	Quantity	Value
		Metric Tons	\$		Metric Tons	\$
By trawlers:						
North Sea	1,948	150,391	13,247,700	1,740	140,064	10,851,000
Iceland	429	39,780	4,872,900	330	34,630	3,183,300
Norwegian Coast	299	39,101	3,877,400	76	8,264	648,000
Bear Island	36	4,658	383,100	133	15,982	1,269,000
Barents Sea	109	15,389	1,241,700	37	5,413	425,700
Total trawler landings ...	2,821	249,319	23,632,800	2,316	204,353	15,407,000
Seagoing Cutters	1,310	11,583	1,477,600	1,959	6,557	1,011,600
Coastal Fisheries	12,082	2,979	594,000	5,425	2,012	157,500
Grand Total	16,213	263,881	25,634,400	9,700	212,952	17,575,100

Landings at the smaller ports of the Bizone totaled 71,973 tons in 1948, or 47.3 percent above the 1947 total of 48,867 tons. All of the landings at the

Table 3 - Hamburg, Cuxhaven & Bremerhaven Herring Catch & Imports - 1948

	German Landings		Imports		Total	
	Metric Tons	Value	Metric Tons	Value	Metric Tons	Value
1948	118,902	\$9,580	183,086	\$21,087	301,988	\$30,667
1947	112,520	7,882	119,037	11,888	231,557	19,770

smaller ports were caught by German fishers. German fishers thus landed 335,854 tons of fish at all ports of the Bizone in 1948, or 28.3 percent above the 1947 total of 261,817 tons.

¹Official rate of exchange used - One Deutsche Mark equals 30 cents U. S.

²Calculated on a Bizonal population estimate of 41.8 million.



Canada

EXPORTS AT RECORD LEVEL IN 1948: In 1948, Canadian exports of fishery products, including oil, meal, etc., attained a new peak value of \$89.8 million, surpassing by a small margin the former peak value of \$89.0 million in 1946, and rising by about 7 percent above the 1947 total of \$84.0 million, according to the January 1949 Monthly Review of Canadian Fisheries Statistics issued by the Dominion Bureau of Statistics. However, since total landed and marketed values increased by over 25 percent above 1947 levels, exports did not increase as much as did the domestic market.

Principal Canadian Fishery Products Exports to United States - 1948^{1/}
(In thousands of pounds)

	QUANTITY			VALUE		
	1948	1947	1935-39 Average	1948 \$	1947 \$	1935-39 Average \$
Cod and Other Groundfish:						
Fresh and frozen, dressed	7,395	4,146	4,434	726,086	419,574	290,999
" " " , filleted	27,252	19,087	-	5,484,029	3,288,204	-
Smoked	3,000	2,665	1,726	675,501	576,869	197,879
Green salted or pickled	8,560	4,766	12,474	809,935	395,257	333,069
Salted, dried	5,813	8,200	6,336	1,009,607	1,377,728	349,547
" , boneless	6,260	4,411	2,192	1,577,736	1,058,306	191,072
Halibut, fresh and frozen	14,085	13,959	4,618	3,116,302	3,212,438	249,949
Herrings:						
Fresh and frozen	69,443	74,853	25,601	1,656,487	1,188,457	225,723
Smoked	2,029	1,851	896	309,302	255,740	54,771
Pickled	8,759	5,243	977	648,202	390,561	28,300
Canned	1,990	1,107	3	376,735	204,159	227
Sardines, canned	1,112	222	-	253,628	46,316	-
Mackerel, pickled	2,267	2,001	2,265	361,177	299,273	121,060
Swordfish	2,382	1,726	1,781	1,043,489	732,740	219,583
Salmon, fresh and frozen	21,723	21,371	6,822	6,309,350	5,340,868	580,748
Other estuarial fish, fresh and frozen	7,658	5,852	7,930	2,026,892	1,455,723	819,691
Lobsters, fresh	19,401	15,754	10,387	9,181,986	7,627,133	2,048,523
Whitefish, fresh and frozen	13,392	11,642	12,503	3,983,077	2,903,988	1,457,039
Ciscoes, fresh and frozen	6,042	7,275	3,213	917,418	1,385,016	287,273
Trout, fresh and frozen	3,678	3,983	-	1,145,535	1,088,305	-
Other lake fish:						
Fresh and frozen	27,778	27,571	34,032	5,401,436	5,447,659	2,452,568
" " " , filleted	4,836	4,475	-	1,797,509	1,607,399	-
Total of Principal Exports to U.S.	264,855	242,160	138,190	48,811,419	40,301,713	9,908,021
Total Canadian Exports	486,865	477,000	316,794	85,027,549	82,359,203	25,641,165
Percentage of total principal fishery products exports to U.S. to total Canadian fishery products exports	54%	51%	44%	57%	49%	39%

^{1/}Some additional exports to U.S. may be included in a miscellaneous category.

Exports of fresh and frozen fishery products increased from \$38.0 million in 1947 to \$45.3 million, mainly due to the increasing demands of the United States market. Sales of cured fish increased from \$12.3 million in 1947 to \$14.9 million in 1948, based mainly on the strength of Latin American markets, although sales to the other main market for these types (the British West Indies) were down slightly. Exports of canned fish, at \$21.0 million, were down considerably from the 1947 total of \$31.5 million, despite increases in sales to the United States, South Africa, some European countries and Latin America--due mainly to a large decline in sales to the Sterling Area, and to a virtual cessation of relief ship-

ments to other countries. The lifting of export controls on some of the other fishery products, such as oil, meal, etc., permitted a rapid expansion of sales of these types from \$2.2 million in 1947 to \$8.7 million in 1948.

* * * * *

FRESH HERRING GRANTED DUTY-FREE ENTRY: By Order in Canadian Council P.C. 641, passed on February 10, 1949, fresh herring, to be processed in Canadian canneries, is granted duty-free entry into Canada effective February 1, 1949, according to a February 17 report from the American Embassy at Ottawa.

Temporary free entry was granted fresh herring during the period July 1-December 31, 1945, because Canadian packers were experiencing unusual difficulty in keeping up their production and required herring caught in American waters to supplement the Canadian catch. Temporary free entry was again accorded during the period June 1-December 31, 1948.

Fresh herring has been ordinarily dutiable, upon importation into Canada from the United States, at $\frac{1}{2}$ cent per pound (Tariff Item 115a).

Order in Council P.C. 641 follows:

P.C. 641

Privy Council

CANADA

AT THE GOVERNMENT HOUSE AT OTTAWA

THURSDAY, the 10th day of FEBRUARY, 1949

PRESENT:

HIS EXCELLENCY

THE GOVERNOR GENERAL IN COUNCIL:

HIS EXCELLENCY the Governor General in Council, on the recommendation of the Minister of Finance and under the authority of paragraph (k) of section 284 of the Customs Act, Revised Statutes of Canada, 1927, chapter 42, is pleased to order and doth hereby order that fresh herring be accorded the tariff treatment hereunder indicated, effective February 1, 1949:

Herring, fresh, to be processed in
Canadian canneries

British Preferential Tariff	Most- Favoured-Nation Tariff	General Tariff
Free	Free	Free

(To be designated as Tariff Item 115a.)

A. M. Hill (Sgd.)
Asst. Clerk of the Privy Council.



Ceylon

FISHING INDUSTRY: Introduction: As Ceylon fisheries do not meet the relatively high consumption of fish by native Sinhalese on the Island, considerable quantities of fish, fresh and dried, are imported chiefly from India and the Maldive Islands. During January to June, 1948, a total of 34,970,320 pounds of fishery products, valued at \$3,855,223 were imported into the Island principally from these countries.

Fishing is carried on in Ceylon in a primitive fashion from outrigger canoes and catamarans, according to a November 24 report from the American Embassy at Colombo. Line fishing is practiced far out at sea; nets are used in inshore waters and estuaries. Fishing is done during the Southwest Monsoon (April-October) in the Northeast coast of Ceylon; during the Northeast Monsoon (October-April) in the Northwest coast.

Considerable quantities of fish are caught, packed in ice, and shipped to Colombo and other principal towns, tapped by railroad lines. Elsewhere, almost all fish is consumed locally or pickled and dried before shipping. There has been little expansion or contraction in this industry during past years.

The two important fishing banks are Kankasanturai (Pedro Bank) near Jaffna in the northern end of the Island which extends about 650 miles in length; the other bank is at Cape Comorin (Wadge Bank) which has an area of about 2,500 square miles and is located off the southern tip of India.

Although Ceylon has an abundant supply of fish, an increasing supply of fishery products are being imported into Ceylon, chiefly from India, the United Kingdom, and Canada.

Types of Fisheries: The industry is divided into three broad categories; i.e., sea fishing, chank fishing, and inland water fishing.

SHORE SEINE: The most important type of marine fishery is shore seine fishing. The largest proportion of fish is caught by this method of operation which requires 20 to 60 men to operate and is seasonal, lasting only six months at any one place.

It is the custom in this type of fishing that net owners collect labor, by advancing each fisherman between \$15-\$121, about two months prior to the fishing season. Labor will generally not engage in shore seine fishing without this advance. Wages of fishermen range between \$12-\$24 per month in addition to food, which includes tobacco and betel. A daily rice ration of one measure or two pounds is given the fisherman, who supplements this with large amounts of chillies and sugar.

HOOK AND LINE: Another type of marine fishing is carried on from 27- to 45-foot outriggers. The most common is the 31-foot size. Three to ten men generally man one boat on a share basis, the number of fishermen depending on the size of the outrigger. Fishing is done from outriggers with a line and hook, the lines sometimes being as long as 400 feet.

DRIFT AND CAST NETS: The catamaran is also used in marine fishing. This type of sailing vessel consists of three to four logs about 25 feet long lashed together and used with a sail. Drift nets and cast nets are commonly used from these rafts.

TRAWLING: Commercial trawling is carried on off Wadge Bank chiefly by the Ceylon Government, who equip and maintain a trawler. The catch is sold on the open market at the lowest prevailing retail price.

EDIBLE OYSTERS: They are found all along the coast and in the river estuaries, the principal oyster beds being around Bentota on the southwest part of Ceylon. As consumption of oysters is limited to a small number of Europeans, there is no effort made by native Sinhalese to advance oyster beds.

BECHE-DE-MER: Also known as sea slug or sea cucumber, it is found principally off Jaffna, located at the extreme northern tip of the Island. Formerly, it was a considerable fishery.

CHANK FISHERIES: Chank fishing is carried on off Jaffna Island in the north of Ceylon and in parts of the Gulf of Mannar. About 1 $\frac{3}{4}$ millions of chanks are obtained annually from Ceylon beds, which are sold at an average price in Ceylon of \$18 per 1,000 chanks. However, the greater part of the chanks caught off Ceylon are exported to India, where the shells are used in the manufacture of bangles and fetch a better price.

POND FISHERIES: This type of fisheries is carried on chiefly in the North-western Province of Ceylon, around Anuradhapura, from artificial lakes created by irrigation ditches, by seasonal rains, and by drainage due to the overflow of the Mahaweli Ganga. These ponds are stocked with carp, catfish, murrays, and gourmay. Brought from Jaffna, gourmay are considered the best eating fish by natives and Europeans.

WINDOW-PANE OYSTERS: This oyster is found in Lake Tanblegam in the Trincomalee District and was formerly exported mainly to Japan where it was used in the manufacture of cultured pearls. There has been no fishing or cultivation of this oyster since 1937, one of the main reasons being that the beds in Tanblegam Lake have not been kept up or stocked since this date.

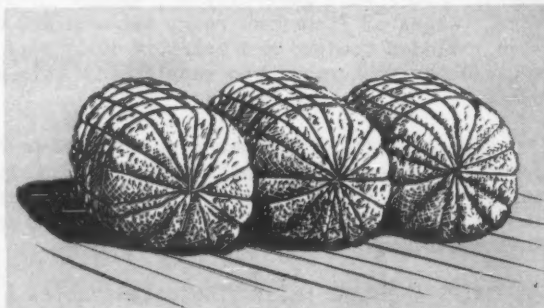
Year	Total Population	No. in Fishing Industry ¹	Percentage of Total Population Engaged in Fishing Industry
1946	6,657,339	112,600	1.7
1921	4,498,605	79,687	1.7

¹ Includes only those persons whose principal employment is in the fishing industry.

PERSONS ENGAGED: Persons engaged in and dependent upon the fishing industry number about 112,600, according to the last census taken in 1946.

Imports and Exports of Fishery Products: In 1947, Ceylon's total imports of fishery products amounted to 70,618,900 pounds valued at \$7,678,197 as against total exports and re-exports of fishery products (exclusive of chank and oyster shells) amounting to 196,700 pounds valued at \$30,812.

During January to June, 1948, a total of 34,970,300 pounds of fishery products, valued at \$3,866,531, were imported chief-



SALTED FISH PACKED IN SCREW PINE LEAF MATS FOR EXPORT TO CEYLON.

ly from India and the Maldiv Islands. Exports and re-exports (exclusive of chank and oyster shells) amounted to only 583,600 pounds, valued at \$101,627 shipped to ships' stores, Straits Settlements, and Hong Kong.

Table 2 - Ceylon Imports of Fishery Products

Product	Jan.-June 1948		1947	
	Lbs.	Value	Lbs.	Value
Fish, dried or salted ^{1/}	29,225,900	\$3,059,785	56,293,500	\$5,660,418
" , frozen ^{2/}	100	45	27,800	9,800
" , Maldiv ^{3/}	4,078,500	639,239	7,160,500	1,149,565
" , canned ^{4/}	408,600	92,122	2,935,100	599,040
Other preserved fish ^{5/}	1,257,200	75,340	4,202,000	259,374
Total	34,970,300	3,866,531	70,618,900	7,678,197

^{1/}Mostly from Aden, India and other Asiatic countries.

^{2/}Mostly from Canada, some from the United Kingdom.

^{3/}From Maldiv Islands.

^{4/}Imported from the United States: January-June 1948, 176,600 lbs. valued at \$39,581 compared with 378,700 lbs. valued at \$90,807 for the year 1947; from Canada: January-June 1948, 157,500 lbs. valued at \$36,904 compared with 2,376,400 lbs. valued at \$456,875 for the year 1947.

^{5/}Mostly from India.

This illustrates Ceylon's lack of self-sufficiency in fishery products which, next to rice, are the principal foodstuffs of the Ceylonese.

Prices: Local retail market prices for fresh fish vary from 23 to 60 cents per pound, and dried fish sell from 5 to 45 cents per pound on the local market, depending upon quality and availability.

Government Fisheries Policies: The Minister of Industries, Industrial Research and Fisheries, recently announced to the local press that contemplated objects of his Department with regard to the fishing industry in Ceylon were:

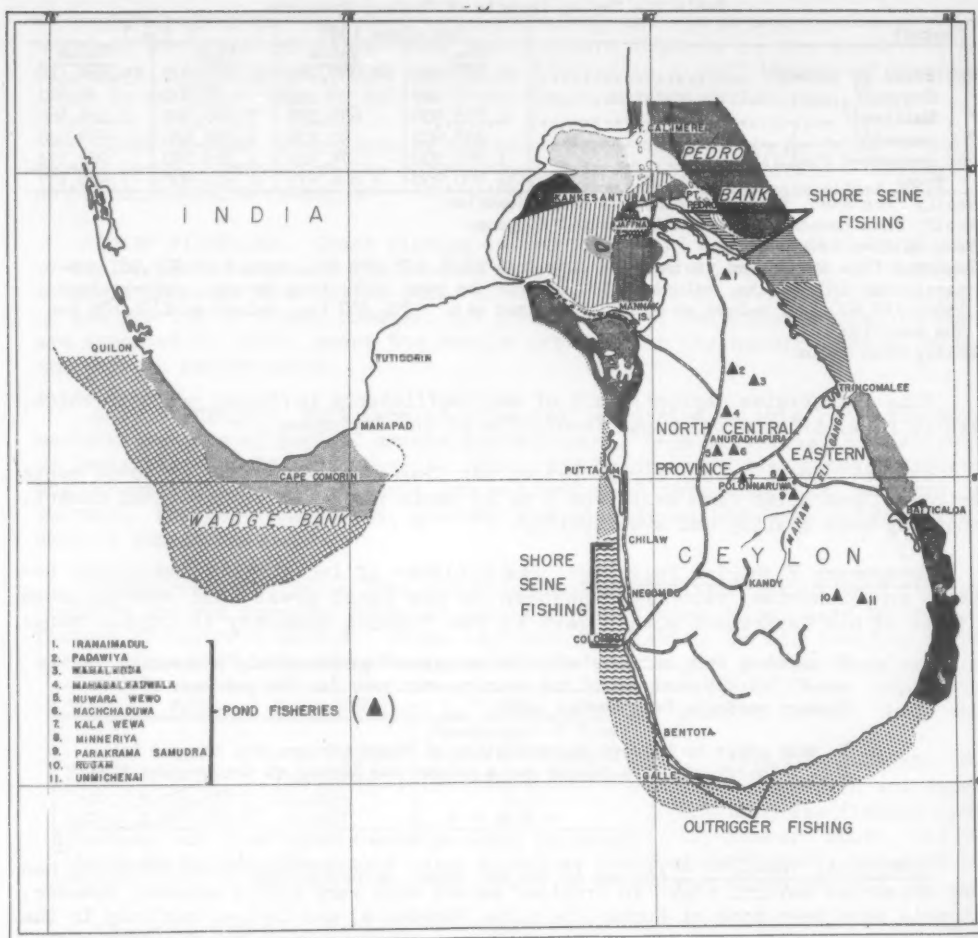
- a. To build up this industry with the purpose of progressively decreasing the \$7,541,478 sent out of the country each year for the purchase of fishery products from abroad, and
- b. To take steps to improve the condition of those persons now engaged in this industry who were "eking out a precarious living at the present time."

* * * * *

COMMERCIAL TRAWLING ATTEMPTS IN CEYLON SEAS: Introduction: Otter-trawling has been attempted several times in tropical waters with very little success. However, attempts have been made at Bombay, Calcutta, Singapore, and Ceylon, but only in the latter area has there been any success during the past decade, according to a mimeographed paper, "Commercial Trawling in Ceylon Seas" by C. Amirthalangam, Director of Fisheries, and E. R. A. de Zylva, Assistant Director of Fisheries, Ceylon.

Trawling was first tried around Ceylon in 1902. In 1913-14 and between 1919-1928, the Government carried on experimental trawling. Based on these trials, a private fishing company was organized in 1928 and operated until 1935 when it went into liquidation as it was unable to market its catch successfully. In 1945, the Government again tried commercial trawl-fishing in order to increase Ceylon's fish supply during the war, and its favorable results encouraged a private company in 1947 to obtain two vessels with refrigerated holds and engage in otter-trawling.

Trawling Grounds: Trawling is possible on the continental shelf, which is of varying depth up to 100 fathoms. Trawling beyond the continental shelf has not been attempted as the seabed falls very steeply from the edge of the shelf.



LOCATION OF FISHING GROUNDS AND POND FISHERIES. THE DIFFERENT STIPPLING PATTERNS INDICATE THE VARIOUS TYPES OF BOTTOM DEPOSITS OF THE LITTORAL WATERS AROUND THE ISLAND OF CEYLON AND THE SOUTHERN TIP OF INDIA.

The coastal strip of 10 to 20 miles on the west, south, and east of the Island has not given good catches. The Wedge Bank has been the most often fished. It is over 4,000 square miles in extent, and lies outside Indian territorial waters off Cape Comorin from Manapad to Quilon. The Pedro Bank lies off the northeast coast from east of the Jaffna Peninsula northwards to Point Calimere on the Indian Coast, and is about 1,500 square miles in area. Both of these banks are beyond the reach of the type of craft now used by local fishermen. The vessels worked

day and night as far as possible while out fishing, following the normal commercial practice, with occasional interruptions in this routine due to damaged nets or very heavy catches.

Vessel Operations and Handling of Catches: Fish was gutted and washed clean with sea water before storage in the refrigerated hold. In the case of rays and skates, the general practice was to take only the wings.

Catches by the two vessels operated by the new company formed in 1947 consist of 63.6 percent large fish, 16.3 percent small fish, and 20 percent shark, skate, ray, and catfish.

The catch per vessel during 1945 to 1947 on the Wadge Bank averaged between 4,600 to 6,400 pounds of fish for each day absent from port. This compared favorably with the catch on the fishing banks off the northern and western coast of Scotland and Ireland, but was not as great as in the banks around Bear Island or Iceland.

Disposal of Catches: Some of the earlier trawling ventures followed the practice of disposing of their catch by giving the fish on arrival to an agent who put it into cold storage and later sold it to the trade. However, the fish did not always reach the consumer in as fresh a condition as was possible. The latest commercial venture also attempted the same type of merchandising, but as it was soon realized that the consumer did not like frozen fish, it was decided to dispose of the fish through the Department of Fisheries by the speediest possible method even though it generally meant lower prices. At present, the catches are sold at fixed wholesale prices to a number of regular dealers for immediate retail sale at fixed prices so that the entire catch is disposed of within two or three days.

Future Trawling Prospects: Every trawling attempt in Ceylon waters has served to prove that excellent fishing is available within easy reach of the market, according to the authors of the report. It has proved even more conclusively that the real problem lies in the disposal of trawler fish. The failure of earlier trawling ventures was due to the difficulty in establishing a regular outlet for the abundant catches which the trawlers were able to bring in regularly. The experience to date shows that future trawlers built for operation in tropical waters should be oil-fired steam-driven with diesel auxiliary engines, instead of the coal-fired steam-driven engines used at present. In addition, it is pointed out that with the development of a trawling industry there should be ample scope for the utilization of fish offal for production of fish guano, which it is believed will find a ready market in the Island's planting districts. Plans are already under consideration to establish such a plant. In the absence of an organized fish trade in the Island, it seems that the maintenance of a complete marketing organization under the control of the producer is desirable.

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DANISH FISHERIES EXPERTS TO MODERNIZE FISHERIES: A Danish fisheries biologist, who left for Ceylon on February 12, has accepted an invitation from the local Government of the Island of Ceylon to work for some months on the modernization of the Ceylon fishing industry, according to a January 31 report from the American Embassy at Copenhagen, Denmark. He expects to return to Denmark in May. He will be assisted in a number of practical matters by an experienced Danish fisheries captain who will accompany him on his trip.

Besides working in the above-mentioned capacity for the Government of Ceylon, the biologist will investigate (for the Danish Government) the possibilities of expanding trade between Denmark and Ceylon. In this respect, he will work semi-officially and with the approval of the Royal Danish Ministry of Fisheries. According to reports, one of Denmark's largest manufacturers of equipment for canneries and similar industrial establishments already has sent one of its engineers to investigate the possibilities for the establishment of fish meal factories and fish canneries in Ceylon.



Denmark

GOVERNMENT TO STUDY JURISDICTION OVER THE CONTINENTAL SHELF: The Royal Danish Ministry of Foreign Affairs on December 16, 1948, established a committee for the investigation of "the problems of political, international-legal, economic, and scientific nature in connection with the jurisdiction over the 'Continental Shelf'," according to a January 21, 1949, report from the American Embassy at Copenhagen.

The Committee will be headed by the said Ministry's advisor on problems of international law, and will include representatives of the Prime Minister's Office; the Ministry of Naval Defense; the Ministry for Public Works; the Ministry for Commerce, Industry, and Navigation; the Ministry for Fisheries; the Ministry for Education; and the Greenland Administration.

In an interview granted to Nationaltidende, the advisor to the Minister of Foreign Affairs gave the following popular definition of the continental shelf which was published on December 17, 1948: "the sloping submarine area between the territorial border and the deep sea." He further stated that the establishment of the committee resulted from the decision taken by the United States in connection with American submarine oil explorations in the Mexican Gulf, and by Iceland with regard to fishery rights.

MINISTRY OF FISHERIES EXPERIMENTAL VESSEL LAUNCHED: An experimental fishery vessel of 120 gross-registered tons, constructed for the account of the Royal Danish Ministry of Fisheries, was launched in the Frederikssund shipyard on January 19, 1949, according to a January 31 report from the American Embassy at Copenhagen. The vessel is characterized as "the world's most modern fishery vessel." Intended for experimental use in the North Sea and in other more distant fishery

Important Measurements of the New Vessel	
Length	95 ft.
Breadth	23 "
Depth	11 "

areas, such as the Greenland waters, it is equipped with a laboratory and instruments for marine exploration. Accommodations for a master, a crew of nine, and two scientists are provided.

The vessel is powered by a 400 hp. diesel engine and has a speed of 11 knots. The main engine supplies power to the net windlass, whereas all other parts of the deck machinery receive their power supply from two auxiliary motors of 60 hp. each, which also supply power for the lighting installations. The electrical deck machinery is composed of an anchor windlass, a net windlass, and a windlass for the hydrographic equipment. The windlasses are of a new and special Danish construction with special electric clutches of the "booster" type. The vessel has installations for quick freezing of fish at -30° C. (-22° F.) together with regular refrigerating equipment and cargo space for frozen fish. The refrigerated holds are insulated by a

new material which is moisture-resistant and the walls are covered with aluminum plates which are not affected by salt water.

The vessel's nautical equipment includes two sounding gears, two radio direction finders, a large telegraph transmitter, a telephone transmitter, and three radio receivers. In addition, it has a Decca navigator and a command loudspeaker with a range of three nautical miles. Space has been allocated for the installation of radar equipment.

The new ship is expected to be delivered in June 1949.

It is contemplated that a sister vessel, also under construction for the Icelandic Government, will be launched within three months.



Honduras

STATUS OF FISHERIES: The Honduran fishing industry remained almost latent, but a new company to exploit the fisheries in the waters outside the Gulf of Fonseca was being organized, according to a February 7 report from the American Embassy at Tegucigalpa. Others were considering the feasibility of shipping fish to the United States from the Honduran North Coast by air. The contemplated fish cannery remained an indefinite scheme. During the year ending June 30, 1948, there were 24,592 pounds of dried and salted fish exported to El Salvador.



Iceland

FISHERIES TRENDS, 1948: Iceland derives her livelihood from the sea almost entirely. Fish and fish products constitute about 95 percent of Iceland's total exports. Likewise locally, fish is the mainstay of the Icelandic diet. The Icelanders are entirely dependent upon their fish exports to meet their needs for food and other essentials from abroad, according to a 1948 annual report from the American Legation at Reykjavik.

Since Iceland has not received any direct grant, there are no ECA counterpart funds available for the expansion and improvement of agriculture and the fishing industries. There are, likewise, no technical assistance funds available.

Qualitatively, Iceland has been expanding her fishing fleet considerably during the past few years. As a result, the output of fish and fish products has increased from 298,000 metric tons in 1938 to 478,000 tons in 1947. Unfortunately, the Icelanders have encountered difficulties in marketing their fish and fish products abroad because of the high local production costs. The Government subsidizes the exports of particular types, such as the frozen fillets, salted fish, etc. The "new reconstruction" trawlers have been able to market their iced fish at a profit.

NEW ANTI-INFLATION BILL: The Anti-Inflation Act, passed by the present session of the Althing, went into effect January 1, 1949, according to a February 4 report from the American Legation at Reykjavik. The Government again, as in December 1947, is undertaking to compensate the fishermen and motorboat fleet own-

ers for financial losses incurred because of the poor summer (1948) herring fisheries. The basic purpose of the Bill is to provide financial aid to the motorboat fleet, which fishes for herring and supplies the refrigeration plants with whitefish. (See Commercial Fisheries Review, January 1949, page 33.) The Act seeks to maintain those sections of the fishing industry which, because of high production costs and poor catches, could not otherwise continue operations. Its secondary incidental aim is to ease the inflationary pressures by means of further taxation.

The following is a summarization of the leading features of the Act relating to fisheries:

In regards to the Government guarantee of export prices, etc., the purpose of the Bill is to secure for the motorboat fishing industry in 1949 a price of 65 aurar per kilo of fresh fish ($4\frac{1}{2}$ cents per pound), based on cod and haddock, gutted with head. The Treasury guarantees refrigeration plants the difference between the sale price of haddock fillets and Kr. 1.33 per pound (approximately 20 cents per pound) f.o.b., and proportional prices of other species of fish; and guarantees salt fish exporters the difference between the selling price and Kr. 2.25 per kilo (approximately $15\frac{1}{2}$ cents per pound) f.o.b., based on fully cured large cod first class, and the prices of other classes and species of fish shall be proportional. In addition, a proportional price shall be guaranteed for exported dried fish. These guarantees apply solely to fish sold to countries determined by the Government with a view to marketing possibilities at each time.

In order to guarantee the stated price for fresh fish and the sale of the catch, the Bill authorizes the Government to guarantee the price of exported fish which is processed in a manner other than fillets, salted, and dried. The Government is authorized to issue instructions concerning the processing of fish in accordance with marketing possibilities.

The Act also provides for the partial reimbursement by the Government for the storage cost of refrigerated fish and spoilage of long-stored salt fish.

The Bill provides for the use of up to 5 million kronur (approximately \$770,000) to lower the production costs of fish products.

Various minor regulations enable the Government to fix the prices of fresh fish, bait, and charges for the repairs of vessels, machinery, fishing gear and other fisheries equipment. Also, that during the period of guarantee established by the law, interest on operation loans of the fishing industry and the enterprises which process fish products for export must not be higher than 4 percent, and the loans must not exceed 85 percent of the guaranteed price.

Concerning aid to fish producers who were engaged in herring fisheries during the period 1945-48, the Government, in addition to the price guarantees, is authorized to determine that fish producers and fish production enterprises which were engaged in herring fisheries during the period 1945-48 be granted in part or in full: cancellation of redeemed marine mortgages; cancellation of loans; and cancellation of loans which they were granted from the Treasury because of failure of herring fisheries in the summers of 1945 and 1947. The law provides various conditions for cancellation of claims, loans, and debts.

The Bill establishes a special State Inflation Fund which shall be used to meet the payments of the guarantees on the price of exported products and payments

to bring down the price of commodities and local production costs. This fund is to be obtained from already existing and new sources of revenue.

It is estimated that 70 million kronur (approximately \$10,780,000) are necessary to finance this program in 1949 with its dual objective of paying for export fish prices and holding down the price level.

GOVERNMENT-FISH PRODUCERS AGREEMENT: The new Anti-Inflation Act, which did not meet with the complete approval of the Federation of Icelandic Fish Producers, was supplemented by a temporary agreement between the Federation and the Government in order to make it possible for the motorboat fleet to start operations immediately.

The Agreement emphasized that the Sales Union of Icelandic Fish Producers will take all possible measures to create a sound and practical operational basis for the motorboat fleet, and that they will receive the support of the Government and Althing. In addition, the Agreement provides for the Government to enact legislation on catch and share insurance; the use of the 5 million kronur (approximately \$770,000) appropriated for the purpose of decreasing the production costs of the industry; authorization to fish producers to dispose of the foreign exchange received for exported roe and, particularly, specified export products which have not been produced to any great extent in the past few years; and that the operations status of the quick-freezing plants be improved by paying charges for storage of quick-frozen fish, compensation on the shrinkage of salted fish, and storage charges for salted fish. The actual execution of some of the above will be decided later in special agreements with the parties concerned.

TRADE AGREEMENT WITH THE NETHERLANDS: On December 17, 1948, a Trade Agreement was concluded between Iceland and the Netherlands in The Hague which calls for the exchange of goods to the equivalent of \$5,600,000 during the year ending November 30, 1949. Iceland's exports to the Netherlands will consist of fish meal, cod liver oil, quick-frozen and salted fillets, calfskins, and fish and fur skins. In return, the Dutch will export to Iceland a variety of products other than fish. As a result of this Agreement, the trade between the two countries will be double that of 1948.

TRADE AGREEMENT WITH UNITED KINGDOM: In London, in December 1948, another Agreement was signed between the Icelandic and British Governments concerning the sale of iced fish to Bizonia. The Agreement calls for the delivery of 67,000 metric tons of iced fish to German ports between February 1 and October 31, 1948. The Agreement will keep the major part of the ocean-going trawlers in operation, thereby providing revenue and employment. In 1948, the Icelandic trawler fleet comprising 49 vessels (at present 45) made 504 sales trips, 262 to Great Britain and 242 to German ports. A total of 118,516 tons of iced fish were delivered, valued at \$19,370,000.

FISH PRODUCTION IN 1948: Despite the poor summer herring season, the total fish catch in 1948 amounted to 409,208 metric tons of fish; or 22,000 tons less than in 1947. The winter herring season, which commenced in November and terminated in January, produced only 3,000 tons of herring. As compared with the 1947-48 winter herring season, herring catches for 1948-49 were considered a total failure. In order to carry on its white fish fishing, which started in January and will continue until the end of May, Iceland will import from Norway about 1,000 tons of frozen herring to be used as bait.

Iran

GOVERNMENT-OWNED SARDINE AND TUNA CANNERY: Production: The Government-owned fish cannery at Bandar Abbas on the Persian Gulf began operation in 1941, according to a January 24 report from the American Embassy at Tehran. It is equipped with Danish machinery, and has an optimum productive capacity of 5 metric tons of fish (about 20,000 cans) per 8-hour day. Present production, about 50 or 60 metric tons of sardines and tuna, for the 5-month fishing season from mid-October to mid-March, is a mere fraction of potential production. In spite of the small production, the Government has difficulty in disposing of the cannery's output. The organization which operates the Government-owned factories credit this to a prejudice on the part of the Iranians against canned foods. It might also be attributed to a poor quality product, high prices, and present marketing methods.

Quality and Prices: SARDINES: The Iranian sardines sell for a price equal to high quality Portuguese sardines, but it is highly doubtful if they could be marketed in the United States or Europe at any price because of the poor quality.

TUNA: The Iranian tuna is vastly superior to the sardines. It is of excellent quality and good taste. However, the pack is of different sizes and colors and, presumably, because of an improper bleeding method, the tuna is dark. The cutting of the tuna also produces flakes rather than solid pieces. The tuna is packed in olive oil. With skilled processing, the Iranian tuna would probably offer a good export possibility, provided production costs could be lowered to a competitive level. A case of 48 10-ounce cans of Iranian tuna sells for \$14.50 and a case of 100 4 $\frac{3}{4}$ -ounce cans sells for \$20.00. These prices are estimated to be 30 percent higher than the prices Iranian tuna could command on the world market.

Prospects of Development: There is considerable doubt whether the Persian Gulf sardines are an export asset. The tuna, on the other hand, presents possibilities. A still better export possibility is edible fish oil for which there is an existing heavy world demand. The Persian Gulf abounds in oil-bearing fish--including sharks, from which shark liver oil could be extracted. The Bandar Abbas cannery has a small oil pressing machine, but it has never been put into use. Oil extraction on a scale large enough to make export worthwhile would require additional machinery.



Japan

ARRIVAL OF AMERICAN FISHERY SCIENTISTS: Three American fishery scientists from the Pacific Oceanic Fisheries Investigation arrived in Tokyo on November 17, 1948, to study the tuna and other pelagic fishery resources of Japan, according to the November 20 Weekly Summary of SCAP. The Pacific Oceanic Fisheries Investigation is a part of the U. S. Fish and Wildlife Service, Department of the Interior, with headquarters in Honolulu. These scientists are assigned to Natural Resources Section during their four-month stay in Japan.

ESTABLISHMENT OF A FISHERIES CREDIT GUARANTEE SYSTEM: Shortage of material and supplies experienced by the Japanese fishing industry throughout World War II and in the post-surrender period placed the industry in a critical situation and forced it to use makeshift materials, which greatly increased operation costs.

To alleviate this situation, the United States supplied materials which were received and processed in Japan, but these materials began to accumulate and stockpile at the manufacturers because the Japanese fishermen were financially unable to purchase them. In addition, the fishermen's financing difficulties were aggravated by abnormally poor catches of bonito and sardines for the past season.

A number of petitions requesting assistance in financing Japanese fisheries, especially the sardine purse-seine fisheries of the Tohoku region, were presented to the Japanese Diet, prior to dissolution in December 1948. The Diet instructed the Japanese Government to take action to alleviate this situation, according to the January 22 Weekly Summary of the Natural Resources Section of SCAP.

The Government prepared a plan called the Fisheries Bill System, which permitted the fishermen to give notes for materials to the manufacturers who would discount them at local banks. These loans are underwritten by the Reconstruction Finance Bank. The program provided that this assistance be extended to medium trawlers, tuna and sardine purse-seiners, and fixed net fisheries. It was estimated that ¥142 million (approximately \$526,000) was necessary for immediate needs, while ¥1,100 million (approximately \$4,074,000) will be needed to finance the four fisheries groups. The latter amount represents 30 percent of their total requirements.

The Japanese Ministry of Finance issued a statement on January 21, 1949, announcing the establishment of the Fisheries Bill System.

This is the first instance in the history of Japanese fisheries of the establishment of an organized method for financing fisheries, and it may well serve as a cornerstone in building an adequate financing system for Japanese fisheries.

In the opinion of Natural Resources Section officials, the Fisheries Bill System will stimulate fish production, and it will serve to further stabilize the nation's economy, as the plan does not necessitate the release of additional money.

PROPOSED LOAN TO FINANCE 1949 AGAR-AGAR PRODUCTION: The agar-agar industry is one of the most important industries in Japan, for purposes of foreign trade, because all raw materials used are of Japanese origin, and the sales are mostly export items. The industry is composed principally of small-scale producers in mountainous prefectures of Japan. These producers cannot finance the purchase of raw materials, and local banks cannot make loans to them unless the loans are underwritten by the Government.

The agar-agar industry needs long-term credit, because the first raw materials are purchased in April, the products are not sold until 18 months later, and another 6 months are required to obtain payment. Therefore, agar-agar producers do not realize any income from their work until after 2 years.

The Japanese Ministry of Agriculture and Forestry has proposed that the Reconstruction Finance Bank set aside ¥150,000,000 (approximately \$555,556) for underwriting loans made by local banks to agar-agar producers.

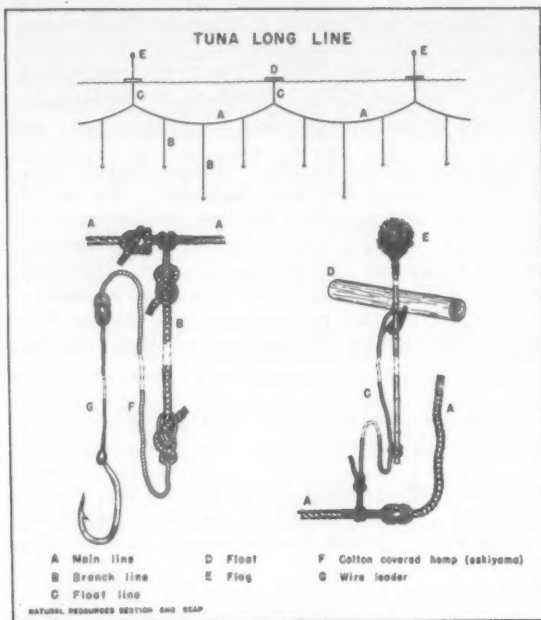
The Japanese Fisheries Agency reported that a system has been established for financing production of agar-agar in 1949 through loans made by local banks and underwritten by the Reconstruction Finance Bank which will be permitted to

Note: Values converted at the military rate of exchange of ¥270 for U.S. \$1.00.

underwrite a maximum of ¥100,000,000 (\$370,370) to be used to purchase seaweed for the production of agar-agar in 1949.

TUNA FISHING AND PROCESSING METHODS: Japanese methods of tuna fishing and processing at Yaizu and Shimizu, Shizuoka Prefecture and vicinity, and Misaki,

Kanagawa Prefecture, were examined by Natural Resources Section personnel of SCAP and reported in that agency's Weekly Summary of January 1 and January 8.



TUNA LONG-LINE GEAR USED BY JAPANESE.

Bait Fishing and Retention

Methods in Japan: When using large bait boats in the South Seas, Yaizu fishermen attempted to carry live bait from Kyushu to the Caroline Islands. However, many bait fish died when warm water was encountered in the area of Latitude 20° N. and southward. The sardine (Sardinops) has a maximum temperature tolerance of 25° C. (77° F.) and the anchovy, a maximum of 28° C. (82.4° F.). Although fishermen carried smaller bait loads and artificially cooled the water, they did not succeed in keeping bait. Installation of refrigeration equipment in bait tanks held promise, but failed because of the uneven distribution of temperature. Poor circulation kept all of the cold water near the refrigeration

coils, and, as a result, the fish tended to crowd into this more nearly optimum area. Overcrowding resulted in injuries and subsequent death of bait. To "train" bait fish to circle in a tank, they are confined for at least a week. During this period, from 40 to 60 percent, and occasionally, 100 percent of the bait fish caught will die. Bamboo baskets generally are best for training fish because they are more easily towed and are darker so that the fish are not so much alarmed. However, live boxes of netting generally are used because water circulation is better and more fish can be confined within the live boxes. In addition, it is easier to get the bait fish out of a live box made of net because the netting can be raised. The fishermen feel that sudden temperature changes will cause the death of the bait fish.

The Misaki tuna fishermen stated that they have not caught their own bait since 1925, the required bait being supplied by professional bait fishermen. After the bait, either sardines (Sardinops) or anchovies (Engraulis), has been held by the bait fishermen for 7 to 10 days, the weak fish have died, and the remainder are tame. Fish suitable for transfer to the bait wells of the fishing vessels generally are thin, having been confined too closely to allow for feeding; are tame and are not frightened when a boat approaches the holding box; and exhibit normal feeding reactions in the holding-box and in the bait wells, that is, they form a school and circle the tank, straining planktonic food from the water.

While fishing for tuna in the South Seas before World War II, Japanese fishermen had difficulty obtaining and holding live bait. Bait supplies are generally poor in the South Seas. Much of it was caught by using "lift nets" at night, with lights to attract the fish. Most live bait died if not used the day after being caught.

Tuna Fishing Methods by Yaizu and Shimizu Tuna Fishermen: The fishermen's statements on the exact location of the yellowfin grounds in the South Pacific were rather vague, as the fishery is of a shifting oceanic nature. The Yaizu fishermen found the best yellowfin fishing between Longitude 135° and 145° E. near Latitude 4° N. The fishing, which is done with long-line gear, is best from January to April. The fish are found on the northern extremity of the equatorial counter-current, and the best fishing shifts eastward in this area as the winter progresses. The fishermen rely very heavily upon their thermometers in locating fish. For yellowfin tuna, the optimum temperature is 28°-29° C. (82.4°-84.2° F.), and 30° C. (86° F.) is too warm. The best fishing is found in schools of fish where the individuals weigh from 65 to 80 pounds. Smaller fish furnish poor fishing, as a rule. Pale blue is the best water for fishing; dark blue or green water is poor. In a good area, small fish often are found in the shade of the line and buoys. If the yellowfin are at the surface chasing these small fish, long-line fishing will be relatively unsuccessful, because the fish are too high in the water.

In searching for skipjack, the Misaki fishermen often use a telescope from the crow's nest. The captain tries to place his craft in the path of an advancing school, intercepting it as it travels. When the school reaches the vessel, bait fish are thrown to the skipjack in an attempt to stop the school beside the vessel. If the school shows no interest in the bait, the vessel circles the school, and more bait is thrown. Ten or fifteen minutes may be spent in this manner, with a maximum of about 150 fish thrown to the skipjack. As soon as the skipjack begin to feed, fishing starts. Jigs are used if the skipjack will accept them; otherwise, live bait is utilized. The fishermen said that they cannot tell whether or not a school will bite until after the bait has been thrown. Skipjack following a school of sardines cannot be caught; a hungry school of fish must be found. Weather seems to have little effect on the vigor with which the fish will bite, as the catch may be equally good in calm and rough weather. Ordinarily, the fishing is best in the early morning and in the evening.

Impounding Yellowfin and Black Tuna: Uchiura, Japan, is one of the very few places in the world where tunas have been held captive successfully. Fishermen had impounded black tuna (*T. orientalis*), yellowfin (*N. macropterus*), and yellowtail (*Seriola sp.*) before the beginning of World War II in an enclosure. The fish were caught in local traps, transferred to a live box, towed to the enclosure, and released. Captured fish put in at a size of about 15 inches grew rapidly but could not be held for long periods of time as they died, apparently from lack of food. The enclosure was a pool about 50 by 75 yards and graded from 6 feet deep near the edges to 18 feet deep at the middle. The tunas had grown about 8 or 9 inches in length during the 3-month period in which they were impounded.

Methods of Tuna Canning Inspection and Byproducts Manufacture: Only two of the tuna canneries are operating at Yaizu. The others are being overhauled for the canning of tangerines or were idle owing to the lack of fish. In general, the canning techniques were the same as those used by canneries in the Tokyo area.

Squalene oil has been produced by a Japanese company on a pilot-plant scale since July 1948. Raw materials for the production of squalene oil are liver oils

from deep-sea sharks, such as Centrophorus squardrous, Lepidochinus foliaceus, and Echinorhinus brucus. Insulin is produced at the byproducts plant of another Japanese company.

STATISTICS ON FISHING VESSELS: The Japanese Fisheries Agency, in addition to the regular quarterly report submitted to SCAP on the number of Japanese fishing vessels (powered, 5 gross tons and over), submitted a report on Japanese vessels powered and non-powered (including boats under and over 5 gross tons) for the period ending June 1948 (see table.)

Vessel Statistics of the Principal Fisheries (For the period ending June 1948)

Type of Service	No. of Craft	Gross Tons
Tuna and bonito	1,719	94,116
Sardine purse seine	3,293	37,403
Trawling in eastern area (boats operating east of 130° E in the East China Sea)	2,741	63,100
Bull trawlers of the western area consisting of pairs of boats operating west of 130°, East China Sea	971	66,305
Fish carriers	6,106	139,223

As of June 1948, the Japanese fishing fleet consisted of 95,412 vessels, representing 698,887 gross tons.



Mexico

SHRIMP FISHING ACTIVITIES IN GUAYMAS CONSULAR DISTRICT: Shrimp fishing and freezing activities in the Guaymas Consular District operated at the lowest level possible within existing contracts due to continued low and soft prices in the United States, according to a January 23 report from the American Embassy at Guaymas, Sonora.

Despite this situation, it is rumored that a new freezing plant is planned in Guaymas. This would be particularly advantageous in that it would permit storage of shrimp during periods of low market prices and thus avoid dumping shrimp in markets already depressed.

The industry has made representations to Mexico City for the removal of a new tax of 200 pesos per metric ton placed on fish handled by the fishing co-operatives, but no alleviation has been forthcoming to date.



Morocco

CANNED FISH INDUSTRY: The Moroccan canned fish industry has increased the number of its plants from 44 in 1938 to 87 in 1948, providing an increase in capacity from 1,117,000 cases to 1,895,000 cases in the same period. In Safi, 4 new factories are being constructed; at Agadir, 18 new factories are being built or planned to be built, and one is planned to be built in the near future at Mogador. With the completion of some of the canning plants presently under construction, this figure may shortly reach 2,210,000 cases^{1/} a year. However, the acute short-
^{1/}One case contains 100 tins $\frac{1}{4}$ club 30, approximately 31 pounds of fish, including oil. This represents a live weight of about 77 pounds of fish.

age of tinplate has restricted production to about 50 percent of capacity, according to the January 22 Foreign Trade, a Canadian periodical.

Moroccan Production of Canned Fish	
	Cases
1947	620,000
1946	350,000
1945	600,000
1944	301,000
1943	251,000
1940	557,000
1935	330,000
1/20,000 cases tuna	

The fish canning industry, at the height of the fishing season, employs between 15,000 and 20,000 people.

The species of fish canned, subject to rigid inspection, in 1948, were, for the most part, sardines (prepared in pure olive oil or peanut oil), with smaller quantities of tuna, anchovy, mackerel, and bonito. Since local consumption is only approximately 20,000 cases a year, Morocco has been obliged to concen-

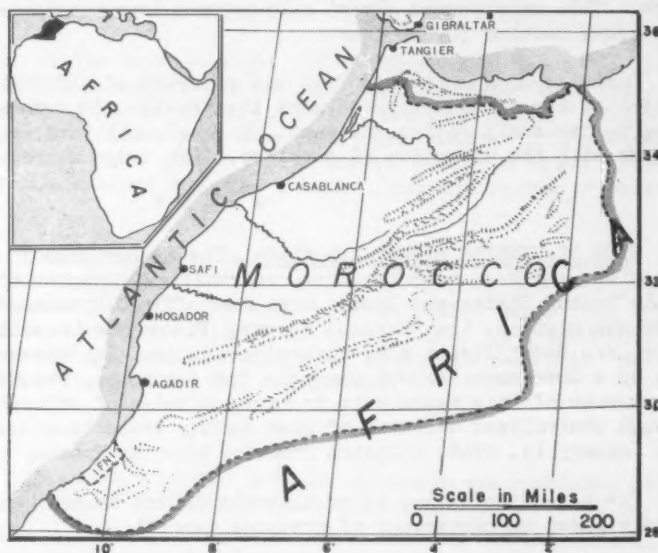
trate on the export market for the sale of her canned fish. The United Kingdom has been the most important purchaser, smaller quantities going to Belgium, Sweden, Holland, and Central Europe. Fortunately for the industry, France and her overseas colonies have been able to absorb about 60 percent of the total Moroccan production.

Morocco is a better source of supply for canned fish than a market. However, certain varieties of fresh fish were imported for the canning plants during the past years as follows: sardines, 226 metric tons from Algeria; other fresh fish, 72.7 metric tons (65.9 metric tons from Algeria).

In view of the preferred position achieved by the Moroccan canned fish industry, the French market is a highly competitive one for the species of fish referred to above.

PRODUCTION OF FISHERY BYPRODUCTS: Since the war, more attention has been given the treatment of fish scraps from the canneries for the production of three important byproducts: fish flour, fish oil, and fish guano. During 1947, a total of 37 plants of varying sizes produced the following: fish flour, 5,000 metric tons; fish oil, 1,000 tons; guano (sold raw), 600 tons.

Possibilities for the further utilization of byproducts have already been studied, and large modern installations are now being built, particularly at Safi, to increase the present output. Refinery capacity for fish oil has been limited



owing to primitive methods, and the output has been disposed of on the domestic market for the tanning and paint industries.

By a recent decree, the Director of Agriculture, Commerce, and Forests has been made responsible for the control of all the ingredients used in the process of obtaining fish flour from scraps. The industry is confident that this will ensure good quality and that before long its products will compete very favorably on the export market.



Netherlands

FISHERIES, 1947: With a steadily growing fishing fleet, the record catch of 1946 was exceeded in 1947; total catches of sea and fresh-water fish were estimated at 175,900 metric tons, of which 73 percent was herring, according to a December 1948 report from the Office of International Trade of the Department of Commerce. This represented almost a 25 percent increase in volume over 1946. Shellfish added another 50,430 tons.

Domestic consumption of fish was reported at 108,700 tons, or more than 60 percent of the total catch and more than double the prewar rate of consumption, owing to the small rations of meat. In 1947, all food was rationed in the Netherlands with the exception of potatoes, fish, vegetables, and fruit.

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SETS UP HERRING EXPORT MONOPOLY: The Netherlands Ministry of Agriculture, Fisheries, and Food recently announced that sole rights to export salted herring to the United States and Canada have been officially assigned to a recently formed trade association, the "Holland Herring Fisheries Association," located at The Hague, c/o Bedrijfschap voor Visserijproducten, 20 Wassenaarseweg. This action sets up a Government export monopoly for herring. The Ministry announced that the purpose of this measure is to increase sales of salted herring in North America through centralized delivery of good quality products at uniform prices, according to a January 19, 1949, dispatch from the American Embassy at The Hague.

The new organization is to allocate orders to various exporters and packers largely based on percentage of previous exports.



Norway

FIND LONG LIVED COD STRAIN: Increasing Norwegian cod fishing off the west-Greenland coast is predicted in light of an anticipated drop in North Norway cod catches during the coming years. Statistics show that the largest catches off the Norwegian coast are made up largely of 10-year-old fish and that yields for 1939, 1940, and 1941 were unusually light, according to the Royal Norwegian Information Service.

This is borne out by record Norwegian catches in 1937 and 1947, with a warning slump in 1948 which may predict a run of poor years, considering the 10-year interval (see Commercial Fisheries Review, February 1949, p. 57).

In 1948, however, the two Norwegian boats which made the long trip to the Greenland banks returned with heavy catches. Tests made there show that the bulk of the catches in the southern waters were made up of 6-year-old fish, predicting a number of good fishing years ahead. The fact that large numbers of 10- and 12-year-old fish were also caught, further indicates that fishing operations there have made but limited inroads on fishing stocks and that the west-Greenland cod is an unusually vigorous and long-lived strain.

Increased Norwegian fishing off Greenland was also seen as a means of better utilizing labor and equipment which is otherwise inactive during the summer months following the end of the Norwegian cod season. Purse seiners operating out from a refrigerator ship were described as the most practical means of solving the distance problem.

SEA-BEEF EXPEDITIONS TO SPITZBERGEN: Plans for increasing Norway's production of whale meat through new whaling enterprises in the Arctic Ocean were indicated recently by the Norwegian Whaling Directorate. Land stations and small whaling concerns operating off the Norwegian coast produced last year a total of 9,500 metric tons of meat--6,000 tons of which were sold as whale beef.

On the assumption that whales hereto caught off the Norwegian coast are but a branch of a larger strain found further out in the Atlantic between Bear Island and Spitzbergen, new expeditions to this isolated area are predicted. Special note is made of the reproductive capacity of this particular strain. Unlike other breeds, which produce offspring every other year, whales found in these areas give birth each year and can therefore comprise a less vulnerable source of whale meat.

Within a short time, it is planned to send two expeditions accompanied by a refrigerator ship to the Spitzbergen area. This will make it possible to freeze the whale meat with a minimum of delay. The mothership will also carry fuel for the whale catchers sufficient to keep the expeditions in the field for considerable periods. While the bulk of the meat will be consigned to domestic markets, possibilities of whale meat export are also being considered.

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TRADE AGREEMENT WITH FINLAND CONCLUDED: A trade agreement was concluded between Norway and Finland on December 22, 1948, in Helsinki, according to a February 15 report from the American Embassy at Oslo. In effect since November 1, 1948, the agreement expires on October 31, 1949.

Norway will export fish and fish products, oils and fats, fatty acids, whale oil, and other miscellaneous products (see table). In return, Norway will import products which do not include any fishery items.

Norwegian Exports of Fishery Products to Finland Under Trade Agreement (November 1, 1948 - October 31, 1949)	
Commodity	Quantity or Value
Salted herring (fat and/or great herring)	10,000 bbls.
Stockfish	400 metric tons
Medicinal cod liver oil	100 " "
Fish oil for industrial purposes	200 " "
Veterinary cod liver oil	100 " "
Pharmaceutical refined herring oil	50 " "
Hardened whale fats	2,000 " "
Vitamin A concentrates	\$22,250 ¹
¹ /Converted on basis of 4.4945 kroner = \$1.00	

The agreement provides that, in addition to issuing required licenses to fulfill the commodity trade stipulated on the lists of products, each country will take all practical measures to facilitate trade in commodities not listed, and in amounts in excess of those listed. Negotiations are now under way in regard to ways and means of increasing the trade between the two countries.

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U.S.S.R. BARS SEALERS: Norwegian sealers, who each year previous to the war, had been granted a letter of safe conduct by the Soviet authorizing sealing in the White Sea area, have not been permitted to hunt in these districts since the end of hostilities. A latest Soviet refusal to discuss the matter has led Norwegian sealers to conclude that the White Sea will be closed to them henceforth, according to the Royal Norwegian Information Service.

Earlier, Soviet authorities based their refusal on the danger of mines in those districts, but for the past two years no reasons were given for denying Norwegian applications.

According to a report appearing in Oslo's Arbeiderbladet, the Russians had promised that the matter would be taken up under recent Norwegian-Soviet trade negotiations in Moscow. When the White Sea question was raised, however, Russian officials refused to consider it, which indicates that there will be no further Norwegian sealing in the White Sea.



United Kingdom

FISHERIES OF SCOTLAND, 1948: East coast Scottish trawlers, in 1948, landed a smaller volume, but higher value, of white fish (haddock, plaice, hake, whiting, halibut, sole) than in 1947, according to a January 13 report from the American Consulate at Edinburgh. Higher price for coal was the chief factor in higher operating costs.

Herring fishermen were more favorable to selling, at a lower but guaranteed price, surplus herring for conversion to oil and meal.

The Herring Industry Board conducted experiments in marking herring and other fish. Its research vessel, Clupea, was used to survey conditions in the Firth of Forth to ascertain why winter herring fishing there has been a failure for several years.

Inshore fishermen began receiving grants allowed on a greater scale, under the White Fish and Herring Industry Act, for acquiring, improving, and repairing boats and gear.



International

TECHNICAL ASSISTANCE FOR ECONOMIC DEVELOPMENT OF FISHERIES: The United Nations and the specialized agencies have assumed, through their basic charters or articles

of agreement and various resolutions adopted by their governing bodies, certain broad responsibilities for helping their Members to obtain the technical assistance needed in connection with their economic development, according to the report, Technical Assistance for Economic Development, issued by the United Nations Department of Economic Affairs, Division of Economic Stability and Development, in September 1948. To carry out these responsibilities, they have created machinery within their organizations, initiated studies of the types of assistance required, and provided, on many different occasions, the technical advice or other assistance for which requests were received.



"Technical assistance" has been considered broadly to include such activities of the United Nations and the specialized agencies, exclusive of the provision of funds and relief supplies, as are designed primarily to assist Member countries in their economic development.

The General Assembly of the United Nations, at the first part of its third session, adopted a resolution which provides for appropriation of funds for rendering technical assistance for economic development by the United Nations. The resolution instructs the Secretary-General, in agreement with Governments concerned, on the basis of requests received from Member Governments, and where appropriate, in cooperation with the specialized agencies, to arrange for:

- (a) The organization of international teams of experts, for the purpose of advising Governments in connection with their economic development programmes;
- (b) The Provision of fellowships for study outside the country;
- (c) The training of local technicians within the country by promoting visits of experts; and to provide
- (d) Facilities to assist Governments in obtaining various technical services which may be needed in connection with economic development.

Responsibility for assistance in the development of agricultural, forest, and fishery resources devolves upon the Food and Agriculture Organization. Broad responsibilities in these fields are established by the organization's constitution which states, in the preamble, that the purposes of the organization include:

"Raising levels of nutrition and standards of living of the peoples under their respective jurisdictions,

"Securing improvements in the efficiency of the production and distribution of all food and agricultural products,

"Bettering the condition of rural populations, and thus contributing toward an expanding world economy."

Paragraph 3 of article I of the FAO constitution provides specifically for technical assistance, stating that it shall be the function of the organization:

"To furnish such technical assistance as Governments may request;

"To organize, in cooperation with the Governments concerned, such missions as may be needed to assist them to fulfil the obligations arising from their acceptance of the recommendations of the United Nations Conference on Food and Agriculture; and

"Generally, to take all necessary and appropriate action to implement the purposes of the Organization . . ."

The agency through which these responsibilities are carried out consists of an International Conference made up of representatives of Member countries; a Council to represent the Conference between sessions; a number of international advisory bodies made up of experts in various branches of agriculture, forestry, fishery or related fields; a large number of national FAO committees; and a secretariat.

Responsibility of assistance in the development and improvement of world fisheries and, consequently, in the world level of nutrition rests largely with the FAO. The scope of FAO's assistance in this field is indicated by its actual achievements and undertakings to date, which include missions, the provision of certain supplies, technical research, and international education and conferences.

Fisheries afford substantial opportunities for raising nutritional levels in the world. They have contributed greatly to the world's food supplies in the past, and it is certain that they can contribute much more. The highly productive continental shelf areas are not by any means fully exploited, especially in the Southern Hemisphere. High-seas fisheries for such species as tuna, sailfish, swordfish, and barracuda have been relatively little developed, although they have enormous potentialities. Fish farming, or the pond culture of fish, is widely practiced, particularly in Europe and the Orient, but mostly in a primitive way. The wider distribution of fish farms, the rigorous selection of the breeds of fish to be cultivated and the application of scientific principles of fertilizing and cropping hold forth great possibilities for utilizing bog lands, ravines, marshes, etc., to increase the quantities of protein available for local populations.

FAO has, on a number of occasions, provided direct assistance to members on matters pertaining to fisheries. It has been responsible for advising the Czechoslovak Government on refrigeration plants. The European representative of the organization has collaborated with ECE in examining the transport question as it affects the distribution of fresh and frozen fish in Europe. A fisheries expert served on the FAO mission to Greece, and further studies of Greek fisheries were subsequently prepared collaboratively by UNRRA and FAO. FAO is assembling material for a world directory of fisheries technologists, biologists, and economists, and is making arrangements for direct technical advice to Member Governments on the establishment and improvement of statistical services in respect of fisheries.

FAO is considering the establishment of a clearing-house for periodic reports on research in the handling of fisheries products, and is undertaking a number of studies concerning technical problems of fisheries and fish products, among them a study on world trade in salted fish and a catalogue of commercial fisheries resources. The organization has in preparation a series of recommendations on nomenclature and synonyms for commercial fish and a survey of methods of fishing, with special emphasis on recent innovations. It also intends to survey the possibilities of reaching an international agreement on quality standards for certain fishery commodities entering into international trade, and it is negotiating with universities and national research institutions for cooperation in basic studies connected with various fishery problems.

To keep Member Governments and private subscribers informed of work in progress and to provide a service on current international fisheries statistics, FAO issues a monthly Fisheries Bulletin. The organization also prepared the first Yearbook

of Fisheries Statistics, and is assisting Members in connection with the world census of fisheries to be conducted in 1950.

FAO is currently exploring, in connection with its roster of technical experts on fisheries, the availability of opportunities for education on various aspects of fisheries. This project, upon completion, will enable the organization to provide Members with information concerning government projects for the education of fishermen in fishing techniques and concerning institutions offering specialized courses in the field of fisheries.

A major project of FAO is the establishment of Regional Fisheries Councils for investigation and development of aquatic resources in parts of the world not actively served by such bodies. These are not intended to be primarily advisory bodies, but rather instruments for coordinating regional research work in the fields of hydrology, biology, technology, etc., on an international basis. With FAO headquarters acting as a clearing-house, they are intended to produce a survey of the world's living aquatic resources and methods of exploiting these wisely. Such Councils are proposed for the North-Western Atlantic, South-Western Pacific, South-Eastern Pacific, Western South Atlantic, Eastern South Atlantic, the Indian Ocean, and the Mediterranean Sea and contiguous waters.

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WORLD FISHERIES SITUATION IN 1949: The fisheries can be expected to contribute increased quantities of fish to world food supplies in the coming year, according to the report, World Food Situation, 1949, issued by the Department of Agriculture's Office of Foreign Agricultural Relations on January 12, 1949. Exchange problems are hampering the movement of fish in international trade and, combined with a larger catch, may result in actual surpluses in principal producing countries and the flooding of the accessible markets.

Increased supplies of fresh fish in many food deficient areas have lessened the need for imports. With the exception of Germany, Italy, and Japan, war ravaged fisheries have generally attained or exceeded their prewar output. Major producing countries, who developed their output during the war to provide food to deficit areas, are finding it increasingly difficult to market at capacity.

Absence of fishing activities for several years off the European coasts resulted in a large increase in fish population and in large catches immediately after the war with less effort and less equipment than in prewar. In 1948, signs of reduced abundance were noted and attributed to overfishing.

Greater quantities of fish were available in 1947 and 1948, especially in areas of short food supply, such as Europe. In 1947, production in Europe (except U.S.S.R.) totaled 5 million metric tons as compared with 1946 production of 4.2 million tons and an average prewar catch of about 4 million tons. Further additions to the fleet were made in 1948 and production has continued to increase. European vessels are fishing the Grand Banks of Newfoundland and other offshore areas in increasing intensity and contributing to food supplies to France, Spain, Portugal, and Italy.

In the Pacific, the Japanese catch is reported at 2.5 million metric tons as compared with 1.9 million tons in 1945 and 3.5 million tons prewar. While Russian production is not known, it can be assumed to be greater than prewar, and is potentially capable of further expansion through utilization of fishing areas formerly exploited by the Japanese.

United States production has remained about the same throughout the war and postwar period. Canadian production, which ranged from 400 to 500 thousand metric tons prewar, reached 550 to 625 thousand tons in the postwar period. Newfoundland and Labrador produced 377 thousand tons in 1946 and 278 thousand tons in 1947 as compared with 60 to 70 thousand tons in prewar.

While an increase in fish canning is reported in some areas, many countries, among these, principally France, Spain, and French Morocco, are not yet producing at full capacity because of their inability to obtain sufficient oil and tinplate.



FISH OF THE PERSIAN AND OMAN GULFS

Methods of fishing and types of gear used in Southern Iran are extremely primitive. For the most part, these are based on the natural movement of the fish and, consequently, the equipment used is generally of stationary types. In some cases, boats of one-half to one ton capacity are used. These are usually propelled by oars or sails.

The most common types of equipment used by Southern Iranian fishermen are briefly as follows:

Drift Net or "Daam" - This is a stationary net devised to intercept sizable fish which, in attempting to pass it, are caught by the gills.

Fish-weir or "Moshta" - The moshta is a trap made of palm branches and works on the principle of admitting the fish on flood tide and trapping them on the ebb.

Cage or "Ghafas" - A funnel-shaped stationary trap made of palm branches and set in the sand with its mouth facing the sea. Usually a series of these traps are fitted together. Fish enter this trap also on flood tide.

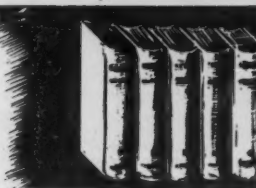
Seine Net or "Toor" - This is the common fish net and is usually employed in shallow water.

Hook and Line or "Ghollab" - Baited hook and line are commonly used for hand fishing.

--Fishery Leaflet 304



FEDERAL ACTIONS



Department of the Interior

FISH AND WILDLIFE SERVICE

COMMERCIAL FISHING AUTHORIZED IN CRAB ORCHARD NATIONAL WILDLIFE REFUGE: The authorization of commercial fishing in Area I and Area II of Crab Orchard National Wildlife Refuge, Illinois, was announced in the February 17, 1949, Federal Register. The complete text of the order follows:

SUBPART—CRAB ORCHARD NATIONAL WILDLIFE REFUGE, ILLINOIS; COMMERCIAL FISHING

Basis and purposes. On the basis of observation and reports of field representatives of the Fish and Wildlife Service, and of the Illinois Natural History Survey, it has been determined that there is an excess of rough fish in Crab Orchard Lake that is interfering with sport fishing and with the production of aquatic vegetation. It further has been determined that the removal of excess rough fish is consistent with the objectives for which the area was established and can best be accomplished by licensed commercial fishing.

The following sections are added:

- Sec.
- 33.54 Authorization
- 33.55 Period of fishing
- 33.56 Fishing licenses and permits
- 33.57 Reports

AUTHORITY: §§ 33.54 to 33.57 issued under R. S. 161; 5 U. S. C. 22; sec. 3, Reorg. Plan III of 1940, 5 F. R. 2107, 3 CFR Cum. Supp.

§ 33.54 **Authorization.** Commercial fishing under permit issued by the officer in charge is permitted in Area I and Area II of the Crab Orchard National Wildlife Refuge in accordance with the provisions of Parts 18 and 21 of this subchapter and subject to the requirements and limitations of §§ 33.55 to 33.57.

§ 33.55 **Period of fishing.** Area I shall be open to commercial fishing during the period from January 1 to May 1, inclu-

sive, of each year. Area II shall be open to commercial fishing during the period from March 1 to May 1, inclusive, of each year.

§ 33.56 **Fishing licenses and permits.** In addition to such State commercial fishing license as is required under § 21.43 of this subchapter, each person fishing commercially shall possess a Federal permit issued without fee by the officer in charge. Such Federal permit shall specify the water or waters in which the permittee may fish and the period or periods during which such fishing may be performed. The officer in charge may limit the kinds of fish that may be taken and the number of permits that may be issued for any particular waters during such periods as he determines to be necessary for the protection of or to prevent disturbance to wildlife using such waters or areas.

§ 33.57 **Reports.** In addition to such reports as may be required by State law or regulation, each person authorized to fish commercially within the Refuge shall submit a report at the conclusion of each fishing season to the officer in charge, correctly stating the kinds of fish and the quantity of each taken by him and the total income received from the sale of such fish.

Dated: February 11, 1949.

[SEAL]

O. H. JOHNSON,
Acting Director.

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1949 ALASKA COMMERCIAL FISHERY REGULATIONS REVISED: Changes in the Alaska regulations for the protection of the commercial fisheries of Alaska for 1949 were issued on February 19 by the Secretary of the Interior, and appeared in the Federal Register of February 26, 1949. Below are given some of the major changes which are a result of the various amendments to the regulations.

The new regulations are based upon investigations and recommendations of Fish and Wildlife Service personnel, testimony presented at public hearings conducted by the Service at eight places in Alaska and at Seattle, Wash., and upon written briefs submitted by those interested in the Alaska fishing industry.

The gradual elimination of fish traps, proposed by Territorial referendum approved by 8 to 1 majority of Alaskan voters, is beyond the scope of these regulations. An Act of Congress would be necessary to authorize such elimination, and proposed legislation for this purpose was introduced in the Congress on January 17, 1949, by Delegate Bartlett. Action to give effect to the proposal approved at the referendum is thus presently beyond the authority of the Department of the Interior. These new regulations, however, do require the closure, for local conservation reasons, of nine traps along the mainland in the Eastern District where the salmon runs have been most seriously depleted. All other types of fishing in these same waters, except trolling, are prohibited also in order that the runs may be rebuilt.

Use of Power in Gill-net Boats in Bristol Bay: The new regulations make no change in the prohibition of the use of power in gill-net boats in Bristol Bay. It was made known at public hearings last fall, and previously, that the Fish and Wildlife Service proposed to limit the over-all length of gill-net boats in Bristol Bay to 32 feet, and eliminate the restriction on use of power in such boats. Action on this, however, has been deferred this year in view of the possibility that the Congress may consider in the near future legislation that would authorize the Department to control and limit the number of boats and units of fishing gear in each area of Alaska. Such control authority would basically alter the whole approach to the problem of conserving the salmon runs of Bristol Bay.

General Regulations Applying to All Fishing Districts: General regulations applying in all fishing districts include revision of the requirements for dealer reporting and boat registration. Except for boats fishing exclusively for halibut, all Alaskan fishing boats must be registered with the Fish and Wildlife Service before each season and decide, power boats must display their name or number on top for identification by airplanes. Both explosives and poisons are now prohibited in the taking of fish, which definitely outlaws the "bluetoasting" of salmon streams for halibut bait. The taking of fish both for bait and as food for fur-bearing animals is specifically defined as commercial fishing and, therefore, subject to all of the regulations. The section specifying the method of opening the heart walls of traps to the free passage of salmon during closed periods has been amended to require that the webbing be lifted clear of the water. (It has been the practice to drop this section of the trap wall previously.)

Herring Regulations: Herring quotas have not yet been determined but will probably be announced in early March. The 1949 regulations do provide, however, for the protection of herring spawning grounds by prohibiting the use of pounds on or within one mile of them and by prohibiting all commercial herring fishing in Silver Bay near Sitka and in the waters adjacent to Fish Egg Island near Craig. These spawning ground closures are initial measures to protect the herring populations of Southeastern Alaska, and further studies will be made this year to determine what other similar regulations may be necessary. A quota of 10,000 barrels of herring is permitted in a newly opened portion of Kachemak Bay in Cook Inlet to determine the present size of the herring population in those waters.

Yukon-Kuskokwim Area: The Yukon-Kuskokwim Area has been expanded to include more northerly waters of Nome and Kotzebue and apply regulations to the newly developing fisheries in that region.

Bristol Bay: Bristol Bay regulations are unchanged except to more clearly describe the boundaries of the Malnek Section and to eliminate the mid-week closure during the fall season.

Alaska Peninsula Area: The Alaska Peninsula Area has suffered severe depletion in its pink salmon runs; to achieve a larger escapement, the season in 1949 will end on August 5 instead of August 12 as heretofore and there will be no fall season. In the Port Moller district, however, the fall season will open on August 10 instead of the previous August 20. No purse seines may be used on the south side of the Alaska Peninsula Area between Castle Cape and Cape Pankof that are less than 100 fathoms or more than 200 fathoms in length.

The Chignik season has been shortened to extend only from June 10 to September 15 because the run is expected to be light this year and the additional period of escapement is thus required. It is hoped that sufficient seeding of red salmon can be accomplished by operation of the counting weir, but extension of the closed area in Chignik Lagoon will be required if this cannot be installed.

Kodiak: The Kodiak regulations show little change. The season in the Karluk and Red River districts will open on June 6 instead of June 10 as last year, and the escapement to Karluk River is fixed at a minimum of 350,000 red salmon prior to July 15 and the same minimum number after that date.

Cook Inlet: Cook Inlet reverts to the same general opening and closing dates established for the odd years, when the runs of pink salmon are characteristically smaller. Port Dick, however, will not open until July 25. The week-end closed period over the entire area is increased to 48 hours, extending from 6:00 a.m., Saturday to 6:00 a.m., Monday, with the possibility of even more closure during the season if escapements to major spawning streams are insufficient. The greater portion of Kamishak Bay is closed to all salmon fishing to rebuild the severely depleted sockeye runs there, in accordance with recommendations of local fishermen and packers.

Resurrection Bay Area: Resurrection Bay Area has two fishing seasons in 1949: June 1 to August 6 and August 15 to September 15. During the fall season, fishing boats in the Area must report to the local Fish and Wildlife Service representative all deliveries of salmon. These regulations are for the purpose of reconciling Resurrection Bay operations during the closed season in nearby Prince William Sound.

Prince William Sound: Prince William Sound regulations remain unchanged from last season except that the use of beach seines is prohibited throughout the Area.

Copper River-Bering River: Fishing seasons on the Copper River are from May 1 to June 15 and from August 10 to September 18, the spring season thus opening two weeks earlier and closing three weeks earlier than usual to rebuild the depleted latter part of the red salmon run.

In the Bering River-Icy Bay Area the closing date of the red salmon season is moved up to June 15 to conform with the Copper River season.

Southeastern Alaska: Several major changes have been incorporated into the regulations for Southeastern Alaska. The general trap and seine seasons have been set for August 22 - September 3 in the Icy Strait, Western and Eastern Districts, and for August 15 - September 3 in the Sumner Strait, Clarence Strait, Southern and South Prince of Wales Districts. Drastically short though these seasons appear when compared to past years, they are nevertheless necessary to conserve and rebuild the severely depleted pink salmon resource in the Southeastern Alaska area. Progress of the runs will be closely watched both before and after the prescribed seasons by Fish and Wildlife Service officials, and additional fishing time will be granted wherever an abundance of pink salmon occurs in excess of spawning requirements.

As an alternative to the short fishing seasons in Southeastern Alaska, it was proposed that certain extensive trap and seine areas be closed in 1949 and that other areas be set aside as preserves. This proposal was discussed widely with fishermen and packers, both in Alaska and in Seattle, and was finally rejected because it appeared that disapproval was almost universal.

A new method is inaugurated this year for utilizing the fall chum salmon runs that occur in October in several bays in Southeastern Alaska. Instead of opening the entire Area from October 15 to November 15 as was done last year, a special fall season of October 5 to October 15 is created in the following bays only: Excursion Inlet, Hood Bay, Chaik Bay, Fort Camden, Security Bay, and Cholsondeley Sound. Patrol boats will be stationed in each of these bays during and immediately preceding the fall seasons; all boats are required to register before fishing with the Fish and Wildlife Service representatives aboard the patrol boats and thereafter report all deliveries of salmon. It will be possible to open other localities to fall fishing by special fall announcement if heavy chum runs should develop in them.

Another amendment of significance throughout Southeastern Alaska prohibits the use of gill-nets except in the Yakutat District, the northern section of the Western District, Taku Inlet, Port Snettisham and the Stikine District. Legitimate use of gill-nets is not feasible except in these localities under the present seasonal restrictions. The gill-net areas listed all have special open seasons much longer than those in the general trap and seine districts; in the interests of enforcement, therefore, a system of registration and reporting by gill-netters to local Fish and Wildlife Service representatives is prescribed.

Special, open, seining seasons, as allowed last year in Tenasnoe Inlet and in outside waters off Prince of Wales Island, are not authorized this coming season. Operations in 1948 demonstrated that such seasons were not warranted.

The closed area at the mouth of the Taku River has been extended and fishing during all seasons is prohibited east of the 134th meridian of west longitude.

The inner portion of Behm Canal from Rudyerd Bay to Bell Island is closed throughout the year to all salmon fishing.

Beach seining in the Yakutat District is prohibited, except in Yakutat and Disenchantment Bays prior to September 2.

Duncan Canal is reopened to shrimp fishing after being closed for two years to determine whether the size of the shrimp would increase.

Reorganization of Alaska Fishery Regulations: Because all of the Alaska Fishery regulations have been recently subjected to the legal process of recodification, numerous additional changes have been effected in designation, structure and wording without affecting the meaning. However, it will be necessary to refer to the Federal Register of December 29, 1948, for purposes of comparison rather than to Regulatory Announcement 22. A number of sections which pertained equally throughout Alaska but which were stated under individual districts have now been consolidated as single sections under Part 102 - General Provisions. Examples are the prohibition against the trailing of gill-net web in closed waters, the requirement for removing set nets from the water during closed periods, and several herring and shellfish regulations of general application.



Department of the Navy

FISHING OPERATIONS IN THE TRUST TERRITORY OF THE PACIFIC ISLANDS: The terms and conditions which will be applicable to fishing operations in the United States Trust Territory of the Pacific Islands were recently announced by the U. S. Naval Deputy High Commissioner of the Territory. The following is the full text of the terms and conditions:

1. Definitions:

(a) Company.

The word "company" as used herein shall include a partnership, corporation, individual doing business on his own account, or any other form of business organization.

(b) DepHiComTerPacIs.

The title "DepHiComTerPacIs" as used herein means Deputy High Commissioner of the Trust Territory of the Pacific Islands and includes the holder of any position which may hereafter be charged with responsibility similar to that now residing in DepHiComTerPacIs with regard to fishing in the Trust Territory.

(c) Trust Territory of the Pacific Islands.

The term "Trust Territory" or "Trust Territory of the Pacific Islands" as used herein means those islands which prior to World War II were administered by Japan under mandate from the League of Nations. It includes three island groups, the Marianas (except Guam), the Carolines, and the Marshalls, which groups extend from 137° East Longitude to 177° East Longitude, and from 1° North Latitude to 20° North Latitude.

2. Records and Reports:

(a) Each off-shore fishing vessel will be required to:

(1) Keep a logbook on a form to be supplied by DepHiComTerPacIs showing for each day of operation the locality of operation, kind and amount of fishing gear used (or amount of time spent scouting), estimated quantity of each species caught, and kind and quantity of bait used.

(2) If engaged in a fishery (tuna, for example), involving the capture or use of inshore species for bait, keep records (on forms provided by DepHiComTerPacIs) of areas fished, kind and amount of bait, fishing gear used, and amount of each bait species captured on each day of fishing, or amounts and kinds of bait acquired by purchase or otherwise.

(3) Such logbooks and records shall be maintained aboard ship, or in case of vessels operating on a daily cruise basis from a shore base, at the base. Copies on prescribed forms may be required by DepHiComTerPacIs on advance notice to the company operating the vessel, but such copies will not be required until further notice.

(b) Shore processing plants will be required to submit the following reports to DepHiComTerPacIs.

(1) Shore establishments engaged in the production of manufactured fishery products will submit monthly and annual reports on the pack of fishery products and the yield of fish meal and oil.

Data on the production of canned fishery products should indicate for each species the size of can and type of pack, such as "in oil", or "not in oil", "in tomato sauce", etc. The annual reports on the production of manufactured fishery products should include, in addition to the volume of the production, the value to the packer at the plant.

- (2) If freezers are constructed ashore, their operators will submit, at the end of each month, a report showing the poundage of each species of fish and shellfish frozen during the month and the stocks of individual species held at the end of the month. If floating freezers are operated, similar information will be submitted regarding them.
- (3) Annual reports will be submitted by operators of shore plants giving the number of persons employed, salaries and wages paid, and the value of the shore establishments.
- (4) Monthly reports will be submitted by cannery reporting on their consumption of vegetable oils and the stocks of these oils on hand at the end of each month.
- (c) Each fishing vessel licensed hereunder shall submit to DepHiComTerPac's a report (commonly referred to as a "fish ticket") for each trip, upon forms supplied by DepHiComTerPac's, showing the name and license number of the vessel, date of landing of the catch, poundage of each species, disposition of catch (including name and address of any company to which sold or delivered), price for which each species was sold (if sale made at time of landing), kind of gear employed in catching fish, place or places of origin, and such further details as may be required by DepHiComTerPac's.
- (d) Copies of any of the above reports which may be requested by the Fish and Wildlife Service, Department of the Interior, shall be furnished that Service by the person required to make such report.

3. Inspections:

- (a) Any vessel, person, or company, granted a license or franchise hereunder, shall permit personnel authorized or designated by DepHiComTerPac's to go aboard any fishing vessel and enter onto any premises, controlled by the licensee or holder of franchise, to gather data on the biology of the fishes, on the methods of capture, efficiency of utilization, and other subjects pertinent to the maintenance of the fish stocks. Such personnel shall be permitted to make such examinations and measurements of fish aboard vessels or at the shore side establishments as may be necessary.
- (b) The operating records and books of any licensee or holder of a franchise hereunder shall be open to agents of DepHiComTerPac's as he may require. All information from such operating records and books shall be kept confidential by DepHiComTerPac's and his agents, except that it may be included with information from others in data published as to fishing conditions without disclosure of data applicable to any particular individual or company.
- (c) A person designated by DepHiComTerPac's may accompany any vessel licensed hereunder on fishing cruises for the purpose of collecting scientific and technical data on the operations and catch and the licensee shall provide quarters and subsistence at cost.

4. Annual fishing license:

Each commercial fishing vessel and individual employee thereon will be required to obtain an annual license

from DepHiComTerPac's or his delegated representative. Applications for licenses will include such details as DepHiComTerPac's may require. The charges for the licenses will be 25¢ per lineal foot for power boats, and \$10.00 for each non-indigenous fisherman. There will be no charge for the licenses for indigenous fishermen or for vessels without power. This section shall not affect requirements applicable to indigenous fishermen engaged solely in fishing not connected with any company granted a franchise hereunder.

5. Lease and use of lands, piers, and facilities:

- (a) Subject to prior commitments and to military requirements, arrangements will be made whereby franchise holders will be permitted to share the use of piers and appurtenant structures owned or operated by the Trust Territory, under such regulations as DepHiComTerPac's may promulgate.
- (b) Lease of suitable Trust Territory public land, so far as available and essentially required, will be granted for ancillary shore activities for not more than 40 years, rent to be determined after competitive bids from companies whose proposals are approved and who are interested in the same or closely similar sites. No privately-owned land may be leased by non-indigenous persons without the prior approval of DepHiComTerPac's. DepHiComTerPac's intends, in granting or refusing such approval, to apply to leases of privately-owned lands the same requirements as those set forth above for public land.
- (c) No services or supplies, except a limited supply of water as available at reasonable charge, will be provided in the Trust Territory by activities of either the Navy or the Trust Territory. Arrangements for emergency repairs and fuel may be made at Guam to the limited extent allowed by Navy Regulations and directives.

6. Inshore Fishing:

- (a) No commercial fishing for inshore, reef, or lagoon fishes shall be permitted except by indigenous inhabitants supplying a local market and except for the taking of fish enumerated in the following subparagraph or specifically authorized by DepHiComTerPac's, for use as bait in catching offshore species.
- (b) Clupeoids (round herring or "bakessa", herring and sardines), engraulids (anchovies or "nehu"), and atherinids (silversides or "lao") may be taken anywhere in the Trust Territory for bait, but the quantity taken will be subject to regulation by DepHiComTerPac's to maintain the optimum sustained yield. Special permission will be granted by DepHiComTerPac's to use other species for bait in areas where such use will not impair subsistence fishing.

7. Indigenous and non-indigenous employees:

- (a) Each company granted a franchise hereunder may import not more than 100 non-indigenous skilled workers. Each such worker will be permitted to bring with him his immediate family not exceeding five (5) in number. The company importing such workers and their families will be responsible for their care and maintenance while in the Trust Territory, and for their removal from the Trust Territory at the end of their employment, or within 10 years of the granting of the franchise if their employment has not terminated earlier, with the following exceptions: this 10-year period may be extended by DepHiComTerPac's in the case of such executive and key supervisory personnel as he may deem necessary for the efficient operation of the enterprise.
- (b) All non-indigenous persons entering the Trust Territory will be subject to health, security, and passport requirements now or hereafter in effect. Persons from the home islands of Japan will not be permitted

to enter the Trust Territory, as employees of franchise holders. Subject to the prior approval of DepHiComTerPacIs as to each individual, Okinawans may be included among the non-indigenous workers provided for above.

- (c) All indigenous residents of the Trust Territory who desire employment must be employed in preference to non-indigenous persons for all positions for which the former are qualified. Any company granted a franchise hereunder must provide on-the-job training for all indigenous persons who so desire and demonstrate such aptitude as indicates that they may be so trained without seriously impairing the over-all operations. Until further notice not less than 25 percent of the crew of each vessel must consist of indigenous personnel, except that if DepHiComTerPacIs determines that the number of available, qualified, indigenous personnel desiring such employment is not sufficient to provide this percent in any locality, he may relax this requirement in such locality. As more indigenous personnel in any locality become trained for fishing, DepHiComTerPacIs will increase the percentage of the crews in that locality required to be indigenous personnel, with the view of enabling the indigenous people to take over operation of the vessels as rapidly as practicable. In raising this percentage, DepHiComTerPacIs may make such distinctions between types of vessels as he deems desirable in order to promote maximum indigenous participation without impeding operations.
- (d) Pay of all employees will not be less than the established Civil Administration wage scale at place of employment, or, in the case of fishermen, such minimum share of the proceeds of the catch as may be approved by DepHiComTerPacIs.

8. Fishing Vessels:

All vessels hereunder must be registered either in the nation whose flag the vessel flies, the Trust Territory, Guam, or American Samoa, and must meet medical and security requirements of DepHiComTerPacIs.

9. Franchises:

Subject to the foregoing, franchises for not more than forty (40) years will be granted to approved companies to catch, purchase, process, sell, and transship fish and fish products and to conduct such ancillary activities as may be approved by DepHiComTerPacIs, within such parts of the Trust Territory (including its territorial waters) as may be specified in each franchise. Nothing herein is to be construed as permission, either to the Company or its non-indigenous employees or their families, to engage in commercial activities, apart from fishing and its ancillary operations, except to provide the requirements of the Company's employees.

Trade with other indigenous inhabitants is specifically forbidden except as it may be licensed and regulated by the DepHiComTerPacIs.

10. Cancellation of license, franchise, or lease:

Any license, franchise, or lease granted hereunder may be cancelled by DepHiComTerPacIs or higher authority in the event of substantial breach by the holder, of any term thereof. Any lease or franchise hereunder may be similarly cancelled if the holder thereof fails to use the leased premises or exercise the rights granted by the franchise for two consecutive years. Any company granted a franchise or lease hereunder may cancel such franchise or lease at any time after it has been in force for 18 months, by giving DepHiComTerPacIs 90 days written notice of the company's desire to cancel. Such cancellation of a lease shall subject the related franchise to revocation by DepHiComTerPacIs at his discretion.

11. Temporary permits until 1 October 1949:

To enable those interested to submit firm and soundly planned proposals, all interested companies which are prepared to meet the foregoing requirements will, upon request to DepHiComTerPacIs, be issued temporary permits to conduct exploratory fishing until 1 October 1949 upon the basis outlined above with the following exceptions:

- (a) The importation of the workers' families into the Trust Territory will not be permitted.
- (b) No fees for licenses or temporary permits will be required.
- (c) No shore sites will be leased, but permission to each company to occupy and use not more than two (2) acres of available public land in any district, for temporary shore installations, will be granted by DepHiComTerPacIs at a nominal rental.
- (d) Use of indigenous personnel will not be compulsory.
- (e) During this period of exploratory fishing, i.e., until 1 October 1949, the Navy will sell fuel, lubricating oil, and limited ship chandlery to fishing vessels, at points in the Trust Territory where these are available.

LEON S. FISK,
Rear Admiral, U. S. Navy,
Deputy High Commissioner of the
Trust Territory of the
Pacific Islands.

Guam, M.I.



Department of State

NORTHWEST ATLANTIC FISHERIES CONVENTION (FINAL ACT AND CONVENTION): On February 8, 1949, the International Convention for the Northwest Atlantic Fisheries and the Final Act were opened for signature following an 11-nation conference held at Washington, D. C., January 26 through February 8, 1949. The 2-week period during which the Convention and Final Act remained open for signature expired on February 22.

Before the expiration date, both documents were signed by Canada, Denmark, France, Iceland, Italy, Newfoundland, Norway, Portugal, Spain, United Kingdom of





Great Britain and Northern Ireland, and the United States. The two observers of the Food and Agriculture Organization of the United Nations and the two observers of the International Council for the Exploration of the Sea signed the Final Act, according to a February 24 press release by the Department of State.

The over-all area covered by the Convention is divided into five sub-areas. These areas generally cover the waters off the west coast of Greenland, Labrador, Newfoundland, Nova Scotia, and New England (Figure 1). The Convention provides for a Commission on which all contracting governments will be represented, and separate panels with particular jurisdiction over each of the sub-areas. The panels will be composed of contracting governments with particular fishing interests in each sub-area.

The primary function of the Commission will be to collect, collate, and disseminate scientific information on international fisheries in the Convention area. While the Commission has no direct regulatory powers, any panel may transmit through the Commission to the governments of such panel for appropriate action recommendations for measures, based upon scientific information, which are deemed necessary for maintaining those stocks of fish which support international fisheries in the Convention area. Within a specified time after action has been taken by the panel governments of each sub-area affected, such measure becomes applicable to all contracting governments.

It was recommended by the Conference that upon the entry into force of the Convention the United States Government, as depository for the Convention, should take the initiative in convening the first meeting of the Commission. The permanent seat of the Commission will be in North America at a place to be determined by the Commission.

It was also recommended by the Conference that, in the interim between signing and ratification of the Convention, the fishery biologists of the several countries might advantageously be drawing up preliminary plans for the scientific work of the Commission. Canada agreed to take the initiative in beginning this work.

This agreement will require ratification and it is anticipated, accordingly, that the agreement will be submitted in the near future to the Senate.

Upon ratification by any four signatory governments, the Convention will enter into force.

Following are the texts of the Final Act of the International Northwest Atlantic Fisheries Conference and the International Convention for the Northwest Atlantic Fisheries:

FINAL ACT

The Governments of Canada, Denmark, France, Iceland, Italy, Newfoundland, Norway, Portugal, Spain, the United Kingdom of Great Britain and Northern Ireland and the United States of America, represented by plenipotentiary delegations;

Having accepted the invitation extended to them by the Government of the United States of America to participate in an International Northwest Atlantic Fisheries Conference; and

The Food and Agriculture Organization of the United Nations and the International Council for the Exploration of the Sea having accepted the invitation extended to them by the Government of the United States of America to send observers to the said Conference;

Appointed their respective representatives, who are listed below by countries, and by organizations in the order of alphabetical precedence:

CANADA

Delegate

Stewart Bates, Deputy Minister of Fisheries,
Department of Fisheries, Chairman

Alternate Delegate

A. W. H. Needler, Assistant Deputy Minister of Fisheries,
Department of Fisheries

Advisers

S. V. Osere, Legal Adviser,
Department of Fisheries

F. M. Tovell, Department of External Affairs

Secretary

F. H. Wooding, Information Officer,
Department of Fisheries.

DENMARK

Delegates

B. Pincoen, Head of Department
Ministry of Fisheries,
Chairman

A. Vedel Tøning, Head of Section,
Commission for Denmark's Fisheries and Ocean Research

Commodore Fritz Aage Hammer Kjelsen, Naval Attaché
Embassy of Denmark, Washington

Laur. Thygesen, Chairman,
West-Jutland Fisheries Association

Kristian Djurhuus, Member, Local Government,
Faroe Islands

Paul Hansen, Fisheries Biologist to the Administration
of Greenland

Niels Bjerregaard, Chairman,
Danish Fisheries Association

FRANCE

Delegates

Marius Terrin, Directeur des Pêches,
Maritimes au Ministère de la Marine Marchande,
Chairman

Jean Joseph Le Gall, Directeur de l'Office
Scientifique et Technique des Pêches Maritimes

Robert Baudouy,
Directeur par Interim des Unions Internationales
au Ministère des Affaires Étrangères

Captain Louis J. Audigou, Administrateur en chef de
l'Inscription Maritime, Washington

Andre Deneustre, Mission de la Marine
Marchande aux U.S.A.,
Bath Iron Works Corporation, Bath, Maine

ICELAND

Delegates

Thor Thors, Minister to the United States,
Legation of Iceland, Washington, Chairman

H. G. Andersen, Legal Adviser, Foreign Office

Arni Fridriksson, Director of the Fishery Department,
University Research Institute,
Reykjavik, Iceland

ITALY

Delegates

Alberto Tarchiani, Ambassador to the United States,
Embassy of Italy, Washington, Chairman

Clemente Bonivir, Commercial Counselor,
Embassy of Italy, Washington

Gian Vincenzo Sero, First Secretary,
Embassy of Italy, Washington

Aldo Ziglioli, Assistant Commercial Attaché,
Embassy of Italy, Washington

Salvatore Ippie, First Commercial Secretary,
Embassy of Italy, Washington

NEWFOUNDLAND

Delegates

Raymond Gushko, Chairman, Newfoundland Fisheries Board,
Chairman

Dr. W. Templeman, Director, Newfoundland
Government Laboratory

NORWAY

Delegates

Klaus Sunnanna, Director of Fisheries,
Directorate of Fisheries, Chairman

Gunner Rollefson, Director of Institute of Marine Research,
Directorate of Fisheries

Olav Lund, Division Chief, Directorate of Fisheries

Technical Advisers

Finn Bryhni, Norwegian Fishermen's Union

Knut Vertdal, Aalesund Shipowner Association

Egil Nygaard, Counselor, Embassy of Norway,
Washington

Wagne Oppedal, Commercial Attaché,
Embassy of Norway, Washington

PORTUGAL

Delegates

Rear Admiral Manuel C. Meyrelles, President of the
Central Commission on Fisheries, Chairman

Dr. Alfredo M. Resalho, Director, Government Marine
Biology Station

Dr. Corrêa de Barros, Vice-President of Court
of Accounting, Treasury Department

Captain Tavares de Almeida, Fishery Department

SPAIN

Delegates

Germán Baróiber, Minister Plenipotentiary and
Charge d'Affaires ad Interim, Embassy of Spain,
Washington, Chairman

Captán de Navío Alvaro Guitián, Naval Attaché,
Embassy of Spain, Washington

José Miguel Ruiz-Morales, First Secretary of Embassy,
Dirección General de Política Económica,
Ministry of Foreign Affairs, Madrid

Pedro Díaz de Espada, Shipowner
San Sebastian

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELANDDelegates

A. T. A. Dobson, Adviser, Ministry of Agriculture and Fisheries, Chairman

A. J. Aglen, Fisheries Secretary, Scottish Home Department

Advisers

J. S. Fawcett, Legal Adviser, British Embassy, Washington

S. J. Holt, Scientific Officer, Ministry of Agriculture and Fisheries

Dr. C. E. Lucas, Director, Fisheries Research, Scottish Home Department

P. J. Macfarlan, Assistant Agricultural Attaché, British Embassy, Washington

D. C. Tebbit, Second Secretary, British Embassy, Washington

R. S. Wimpenny, Deputy Director, Fisheries Research, Ministry of Agriculture and Fisheries

UNITED STATES OF AMERICADelegates

Wilbert M. Chapman, Special Assistant to the Under Secretary for Fisheries and Wildlife, Department of State, Chairman

William E. S. Flory, Deputy Special Assistant to the Under Secretary for Fisheries and Wildlife, Department of State

Hilary J. Deason, Chief, Office of Foreign Activities, Fish and Wildlife Service, Department of the Interior

Frederick L. Zimmermann, Consultant on Fisheries and Wildlife, Department of State

Advisers

Thomas Fulham, President, Federated Fishing Boats of New England and New York, Incorporated

Wayne D. Heydecker, Secretary-Treasurer, Atlantic States Marine Fisheries Commission, New York City

Milton C. James, Assistant Director, Fish and Wildlife Service, Department of the Interior

Patrick McHugh, Secretary-Treasurer, Atlantic Fishermen's Union (A.F.L.), Boston, Massachusetts

Captain Harold C. Moore, Coordinator for Interdepartmental and International Affairs, United States Coast Guard, Department of the Treasury

Richard Reed, Commissioner, Sea and Shore Fisheries, State of Maine

Secretary

Edward Castleman, Office of the Special Assistant to the Under Secretary for Fisheries and Wildlife, Department of State

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONSObservers

Dr. D. B. Finn, Director of the Fisheries Division

Dr. J. L. Kask, Chief of the Biological Branch of the Fisheries Division

INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEAObservers

A. T. A. Dobson, First Vice-President of the International Council for the Exploration of the Sea

Dr. Alfredo M. Ramalho, Vice-President of the International Council for the Exploration of the Sea

The Conference met at Washington on January 26, 1949, under the Temporary Chairmanship of Wilbert M. Chapman, Chairman of the Delegation of the United States of America.

Under the authority of the President of the United States of America the following officers were designated: Clarke L. Willard, Associate Chief, Division of International Conferences, Department of State, Secretary General of the Conference; Charles I. Bevans, Deputy Assistant for Treaty Affairs, Office of the Legal Adviser, Department of State, Treaty Adviser to the Conference; and Donald J. Chaney, Chief Counsel, Fish and Wildlife Service, Department of the Interior, Technical Secretary of the Conference.

At the opening session the Conference agreed unanimously to accept the staff members of the Secretariat provided by the Government of the United States of America.

Wilbert M. Chapman, Chairman of the Delegation of the United States of America, was elected Permanent Chairman of the Conference at the first session held on January 26, 1949, and Klaus Sannanæs, Chairman of the Delegation of Norway was elected Vice Chairman of the Conference at the same session.

The general committees established by the Rules of Procedure adopted provisionally at the opening session were constituted as follows:

EXECUTIVE COMMITTEE

Wilbert M. Chapman (United States) - Chairman
Stewart Bates (Canada)
B. Dinesen (Denmark)
Marius Terrin (France)
Thor Thors (Iceland)
Alberto Tarchiani (Italy)
Raymond Gushue (Newfoundland)
Klaus Sannanæs (Norway)
Rear Admiral Manuel C. Moyrelles (Portugal)
German Barðibar (Spain)
A. T. A. Dobson (United Kingdom)
William E. S. Flory (United States)
Arthur C. Nagle - Secretary

COMMITTEE ON CREDENTIALS

Marius Terrin (France) - Chairman
Stewart Bates (Canada)
German Barðibar (Spain)
Charles I. Bevans - Secretary

The following technical committees were appointed under authorization of unanimous votes of the Conference:

COMMITTEE ON DRAFTING

A. T. A. Dobson (United Kingdom) - Chairman
Stewart Bates (Canada)
B. Dinesen (Denmark)
Marius Terrin (France)
H. G. Andersen (Iceland)
Zian Vincenzo Soro (Italy)
Raymond Gushue (Newfoundland)
Klaus Sannanæs (Norway)
Dr. Corvois de Barros (Portugal)
German Barðibar (Spain)
A. J. Aglen (United Kingdom)
Wilbert M. Chapman (United States)
Barbara S. Williams - Secretary

COMMITTEE ON BIOLOGY

A. W. H. Needler (Canada) - Chairman
A. Vedel Thning (Denmark)
Paul Hansen (Denmark)
Jean Joseph Le Gail (France)
Arni Fridriksson (Iceland)
W. Templeman (Newfoundland)
Gunnar Rollefson (Norway)
Alfredo M. Ramalho (Portugal)
Joaquín Miguel Ruiz Morales (Spain)
Pedro Díaz de Espada (Spain)
S. J. Holt (United Kingdom)
C. E. Lucas (United Kingdom)
R. S. Wimpenny (United Kingdom)
Hilary J. Deason (United States)
Milton C. James (United States)
Howard A. Schuck - Secretary

The final session was held on February 8, 1949.

As a result of the deliberations of the Conference the International Convention for the Northwest Atlantic Fisheries (hereinafter referred to as the Convention) was formulated and opened for signature on February 8, 1949, to remain open for signature for fourteen days thereafter.

The following resolutions and recommendations were adopted and the following statements were received:

I

The International Northwest Atlantic Fisheries Conference RESOLVES:

1. To express its gratitude to the President of the United States of America, Harry S. Truman, for his initiative in convening the present Conference and for its preparation;
2. To express to its Chairman, Wilbert M. Chapman, and its Vice Chairman, Klaus Sannanæs, its deep appreciation for the admirable manner in which they have guided the Conference and brought it to a successful conclusion;
3. To express to the Officers and Staff of the Secretariat its appreciation for their untiring services and diligent efforts in contributing to the fruition of the purposes and objectives of the Conference.

II

The International Northwest Atlantic Fisheries Conference RESOLVES:

That the Government of the United States of America be authorized to publish the Final Act of this Conference, the text of the Convention, and to make available for publication such additional documents in connection with the work of this Conference as in its judgment may be considered in the public interest.

III

The International Northwest Atlantic Fisheries Conference RECOMMENDS:

That in establishing and maintaining the International Northwest Atlantic Fisheries Commission the Contracting Governments give careful consideration to the following conclusions reached at the Conference:

1. Finance:

The probable cost of the Commission during its first year would be in the region of 40,000 dollars.

This estimate is to some extent based upon the present expenditure incurred by the International Council for the Exploration of the Sea, but it must be recognized that the cost of that organization cannot be used as an accurate guide to the possible cost of the new Commission on account of the rather specific and long-standing nature of its setup. The precise amount would necessarily depend upon various considerations such as the location and cost of the office of the Commission for which certain facilities might be available either in the United States or in Canada.

2. Staff:

(1) It is desirable that the Executive Secretary of the Commission should be a biologist. At the same time it is still more important that he should be a man with great administrative and statistical ability. It should also be understood that after the Commission had begun to function normally it would probably be necessary at an early date to increase the staff by the addition of, for example, a statistician.

(2) The responsibilities of the staff of the Commission shall be exclusively international in character and they shall not seek or receive instructions in regard to the discharge of their functions from any authority external to the Commission. The Contracting Governments should fully respect the international character of the responsibilities of the staff and not seek to influence any of their nationals in the discharge of such responsibilities.

3. Scientific Investigation:

(1) In the field of scientific investigations the Commission should be primarily responsible for: (a) arrangement for and coordination of work by agencies, and (b) establishment of working relationships with international agencies. It is important, for the purposes of the Convention, that enlarged and coordinated scientific investigations should be carried out and such investigations in so far as possible should be conducted by agencies of the Contracting Governments or by public or private agencies (e.g., universities or private marine research laboratories). If investigations necessary to the purposes of the Convention cannot be arranged through existing Government, public, or private agencies, they should be undertaken by the Commission, but only in accordance with approved budgets. It is not contemplated that any such investigations conducted by Commission personnel or equipment would include field operations.

(2) The need for thorough consideration of the problems facing the Commission is paramount, and considerable time will be needed for assembling the material required for a determination of those problems. An informal interim committee of biologists might well be asked to assemble such material in advance of the coming into effect of the Convention, and the Government of Canada might take the initial measures to this end.

4. Statistics:

It is important, for purposes of the Convention, that improved statistics of the commercial fisheries in the Convention area should be collected and the Commission should have responsibility for the compilation and distribution of the fishery statistics furnished by the Contracting Governments in such form and at such times as the Commission may require.

IV

The International Northwest Atlantic Fisheries Conference REQUESTS:

That as soon as possible after entry into force of the International Convention for the Northwest Atlantic Fisheries the Depository Government initiate steps for the holding of the first meeting of the International Commission for the Northwest Atlantic Fisheries at some place in North America, without prejudice, however, to the determination of the ultimate location of the seat of the Commission.

V

The International Northwest Atlantic Fisheries Conference RECEIVED:

The following joint statement from the French and Spanish Delegations:

"In the course of the Conference the French and Spanish Delegations have requested that the definition of coastal limits in the Convention area be put in said Convention.

"The Conference did not meet their request, considering that any discussion on this subject would lead to a definition of territorial waters and this matter was formally declared by the Conference out of its competence.

"The French and Spanish Delegations had to yield to the above decision.

"Consequently they cannot agree to paragraph 2 of Article I which, in their innermost belief, is a meddling of the Conference in the aforesaid matter."

VI

The International Northwest Atlantic Fisheries Conference RECORDS:

That, the Italian Delegation, not having received from its Government specific instructions on the text of paragraph 2 of Article I, as embodied in the Second Interim Draft of the Convention, abstained from voting on acceptance of that paragraph.

IN WITNESS WHEREOF the following representatives have signed this Final Act.

DONE in Washington, this eighth day of February, 1949, in the English language, the original of which shall be deposited with the Government of the United States of America. The Government of the United States of America shall transmit certified copies thereof to all the other Governments represented at the Conference.

FOR CANADA: Stewart Bates
A. M. H. Needler
S. V. Ozere
Freeman M. Tovell
P. H. Wooding

FOR DENMARK: E. Dinesen K. Djurhuus
A. Vedel Thining M. Bjerregaard
P. H. Kjolsen Poul M. Hansen
Laur. Thygesen

FOR FRANCE: M. Terrin
Jean Le Gall
Louis J. Audigou

FOR ICELAND: Thor Thors

FOR ITALY: Alberto Tarchiani

FOR HIS MAJESTY'S GOVERNMENT IN THE UNITED KINGDOM AND THE GOVERNMENT OF NEWFOUNDLAND IN RESPECT OF NEWFOUNDLAND:

R. Gushue
W. Templeman

FOR NORWAY: Klaus Sunnans Finn Bryhni
Gunnar Rollefson Knut Vartdal
Olav Lund

FOR PORTUGAL: Manuel Carlos Quintão Meyrelles
Alfredo de Magalhães Ramalho
José Augusto Correia de Barros
Americo Angelo de Almeida Cap. frag.

FOR SPAIN: Germán Baraibar J. Ruiz Morales
Alvaro Guitián Pedro de Espada

FOR THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND:

A. T. A. Dobson
A. J. Aglen

FOR THE UNITED STATES OF AMERICA:

W. M. Chapman	Milton C. James
William E. S. Flory	Patrick McHugh
Hilary J. Deason	Harold C. Moore
Frederick L. Zimmermann	Thomas A. Puhnam
Wayne D. Heydecker	Edward Castleman

Observers:

FOR THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS:

D. B. Finn

FOR THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA:

A.T.A. Dobson
A. J. Agien

CLARKE L. WILLARD

Secretary General

INTERNATIONAL CONVENTION
FOR THE
NORTHWEST ATLANTIC FISHERIES

The Governments whose duly authorized representatives have subscribed hereto, sharing a substantial interest in the conservation of the fishery resources of the Northwest Atlantic Ocean, have resolved to conclude a convention for the investigation, protection and conservation of the fisheries of the Northwest Atlantic Ocean, in order to make possible the maintenance of a maximum sustained catch from those fisheries and to that end have, through their duly authorized representatives, agreed as follows:

ARTICLE I

1. The area to which this Convention applies, hereinafter referred to as "the Convention area", shall be all waters, except territorial waters, bounded by a line beginning at a point on the coast of Rhode Island in 71°40' west longitude; thence due south to 39°00' north latitude; thence due east to 42°00' west longitude; thence due north to 39°00' north latitude; thence due west to 44°00' west longitude; thence due north to the coast of Greenland; thence along the west coast of Greenland to 78°10' north latitude; thence southward to a point in 75°00' north latitude and 73°30' west longitude; thence along a rhumb line to a point in 69°00' north latitude and 59°00' west longitude; thence due south to 61°00' north latitude; thence due west to 64°30' west longitude; thence due south to the coast of Labrador; thence in a southerly direction along the coast of Labrador to the southern terminus of its boundary with Quebec; thence in a westerly direction along the coast of Quebec, and in an easterly and southerly direction along the coasts of New Brunswick, Nova Scotia, and Cape Breton Island to Cabot Strait; thence along the coasts of Cape Breton Island, Nova Scotia, New Brunswick, Maine, New Hampshire, Massachusetts, and Rhode Island to the point of beginning.

2. Nothing in this Convention shall be deemed to affect adversely (prejudice) the claims of any Contracting Government in regard to the limits of territorial waters or to the jurisdiction of a coastal state over fisheries.

3. The Convention area shall be divided into five sub-areas, the boundaries of which shall be those defined in the Annex to this Convention, subject to such alterations as may be made in accordance with the provisions of paragraph 2 of Article VI.

ARTICLE II

1. The Contracting Governments shall establish and maintain a Commission for the purposes of this Convention. The Commission shall be known as the International Commission for the Northwest Atlantic Fisheries, hereinafter referred to as "the Commission".

2. Each of the Contracting Governments may appoint not more than three Commissioners and one or more experts or advisers to assist its Commissioner or Commissioners.

3. The Commission shall elect from its members a Chairman and a Vice Chairman, each of whom shall serve for a term of two years and shall be eligible for re-election but not to a succeeding term. The Chairman and Vice Chairman must be Commissioners from different Contracting Governments.

4. The seat of the Commission shall be in North America at a place to be chosen by the Commission.

5. The Commission shall hold a regular annual meeting at its seat or at such place in North America as may be agreed upon by the Commission.

6. Any other meeting of the Commission may be called by the Chairman at such time and place as he may determine, upon the request of the Commissioner of a Contracting Government and subject to the concurrence of the Commissioners of two other Contracting Governments, including the Commissioner of a Government in North America.

7. Each Contracting Government shall have one vote which may be cast by any Commissioner from that Government. Decisions of the Commission shall be taken by a two-thirds majority of the votes of all the Contracting Governments.

8. The Commission shall adopt, and amend as occasion may require, financial regulations and rules and by-laws for the conduct of its meetings and for the exercise of its functions and duties.

ARTICLE III

1. The Commission shall appoint an Executive Secretary according to such procedure and on such terms as it may determine.

2. The staff of the Commission shall be appointed by the Executive Secretary in accordance with such rules and procedures as may be determined and authorized by the Commission.

3. The Executive Secretary shall, subject to the general supervision of the Commission, have full power and authority over the staff and shall perform such other functions as the Commission shall prescribe.

ARTICLE IV

1. The Contracting Governments shall establish and maintain a Panel for each of the sub-areas provided for by Article I, in order to carry out the objectives of this Convention. Each Contracting Government participating in any Panel shall be represented on such Panel by its Commissioner or Commissioners, who may be assisted by experts or advisers. Each Panel shall elect from its members a Chairman who shall serve for a period of two years and shall be eligible for re-election but not to a succeeding term.

2. After this Convention has been in force for two years, but not before that time, Panel representation shall be reviewed annually by the Commission, which shall have the power, subject to consultation with the Panel concerned, to determine representation on each Panel on the basis of current substantial exploitation in the sub-area concerned of fishes of the cod group (*Gadiformes*), of flatfishes (*Pleuronectiformes*), and of rosefish (*genus Sebastes*), except that each Contracting Government with coastline adjacent to a sub-area shall have the right of representation on the Panel for the sub-area.

3. Each Panel may adopt, and amend as occasion may require, rules of procedure and by-laws for the conduct of its meetings and for the exercise of its functions and duties.

4. Each Government participating in a Panel shall have one vote, which shall be cast by a Commissioner representing that Government. Decisions of the Panel shall be taken by a two-thirds majority of the votes of all the Governments participating in that Panel.

5. Commissioners of Contracting Governments not participating in a particular Panel shall have the right to attend the meetings of such Panel as observers, and may be accompanied by experts and advisers.

6. The Panels shall, in the exercise of their functions and duties, use the services of the Executive Secretary and the Staff of the Commission.

ARTICLE V

1. Each Contracting Government may set up an Advisory Committee composed of persons, including fishermen, vessel owners and others, well informed concerning the problems of the fisheries of the Northwest Atlantic Ocean. With the assent of the Contracting Government concerned, a representative or representatives of an Advisory Committee may attend as observers all non-executive meetings of the Commission or of any Panel in which their Government participates.

2. The Commissioners of each Contracting Government may hold public hearings within the territories they represent.

ARTICLE VI

1. The Commission shall be responsible in the field of scientific investigation for obtaining and collating the information necessary for maintaining those stocks of fish which support international fisheries in the Convention area and the Commission may, through or in collaboration with agencies of the Contracting Governments or other public or private agencies and organizations or, when necessary, independently:

(a) make such investigations as it finds necessary into the abundance, life history and ecology of any species of aquatic life in any part of the Northwest Atlantic Ocean;

(b) collect and analyze statistical information relating to the current conditions and trends of the fishery resources of the Northwest Atlantic Ocean;

(c) study and appraise information concerning the methods for maintaining and increasing stocks of fish in the Northwest Atlantic Ocean;

(d) hold or arrange such hearings as may be useful or essential in connection with the development of complete factual information necessary to carry out the provisions of this Convention;

(e) conduct fishing operations in the Convention area at any time for purposes of scientific investigation;

(f) publish and otherwise disseminate reports of its findings and statistical, scientific and other information relating to the fisheries of the Northwest Atlantic Ocean as well as such other reports as fall within the scope of this Convention.

2. Upon the unanimous recommendation of each Panel affected, the Commission may alter the boundaries of the sub-areas set out in the Annex. Any such alteration shall forthwith be reported to the Depository Government which shall inform the Contracting Governments, and the sub-areas defined in the Annex shall be altered accordingly.

3. The Contracting Governments shall furnish to the Commission, at such time and in such form as may be required by the Commission, the statistical information referred to in paragraph 1(b) of this Article.

ARTICLE VII

1. Each Panel established under Article IV shall be responsible for keeping under review the fisheries of its sub-area and the scientific and other information relating thereto.

2. Each Panel, upon the basis of scientific investigations, may make recommendations to the Commission for joint action by the Contracting Governments on the matters specified in paragraph 1 of Article VIII:

3. Each Panel may recommend to the Commission studies and investigations within the scope of this Convention which are deemed necessary in the development of factual information relating to its particular sub-area.

4. Any Panel may make recommendations to the Commission for the alteration of the boundaries of the sub-areas defined in the Annex.

5. Each Panel shall investigate and report to the Commission upon any matter referred to it by the Commission.

6. A Panel shall not incur any expenditure except in accordance with directions given by the Commission.

ARTICLE VIII

1. The Commission may, on the recommendations of one or more Panels, and on the basis of scientific investigations, transmit to the Depository Government proposals, for joint action by the Contracting Governments, designed to keep the stocks of those species of fish which support international fisheries in the Convention area at a level permitting the maximum sustained yield by the application, with respect to such species of fish, of one or more of the following measures:

(a) establishing open and closed seasons;

(b) closing to fishing such portions of a sub-area as the Panel concerned finds to be a spawning area or to be populated by small or immature fish;

(c) establishing size limits for any species;

(d) prescribing the fishing gear and appliances the use of which is prohibited;

(e) prescribing an over-all catch limit for any species of fish.

2. Each recommendation shall be studied by the Commission and thereafter the Commission shall either

(a) transmit the recommendation as a proposal to the Depository Government with such modifications or suggestions as the Commission may consider desirable, or

(b) refer the recommendation back to the Panel with comments for its reconsideration.

3. The Panel may, after reconsidering the recommendation returned to it by the Commission, reaffirm that recommendation, with or without modification.

4. If, after a recommendation is reaffirmed, the Commission is unable to adopt the recommendation as a proposal, it shall send a copy of the recommendation to the Depository Government with a report of the Commission's decision. The Depository Government shall transmit copies of the recommendation and of the Commission's report to the Contracting Governments.

5. The Commission may, after consultation with all the Panels, transmit proposals to the Depository Government within the scope of paragraph 1 of this Article affecting the Convention area as a whole.

6. The Depository Government shall transmit any proposal received by it to the Contracting Governments for their consideration and may make such suggestions as will facilitate acceptance of the proposal.

7. The Contracting Governments shall notify the Depository Government of their acceptance of the proposal, and the Depository Government shall notify the Contracting Governments of each acceptance communicated to it, including the date of receipt thereof.

8. The proposal shall become effective for all Contracting Governments four months after the date on which notifications of acceptance shall have been received by the Depository Government from all the Contracting Governments participating in the Panel or Panels for the sub-area or sub-areas to which the proposal applies.

9. At any time after the expiration of one year from the date on which a proposal becomes effective, any Panel Government for the sub-area to which the proposal applies may give to the Depository Government notice of the termination of its acceptance of the proposal and, if that notice is not withdrawn, the proposal shall cease to be effective for that Panel Government at the end of one year from the date of receipt of the notice by the Depository Government. At any time after a proposal has ceased to be effective for a Panel Government under this paragraph, the proposal shall cease to be effective for any other Contracting Government upon the date a notice of withdrawal by such Government is received by the Depository Government. The Depository Government shall notify all Contracting Governments of every notice under this paragraph immediately upon the receipt thereof.

ARTICLE IX

The Commission may invite the attention of any or all Contracting Governments to any matters which relate to the objectives and purposes of this Convention.

ARTICLE X

1. The Commission shall seek to establish and maintain working arrangements with other public international organizations which have related objectives, particularly the Food and Agriculture Organization of the United Nations and the International Council for the Exploration of the Sea, to ensure effective collaboration and coordination with respect to their work and, in the case of the International Council for the Exploration of the Sea, the avoidance of duplication of scientific investigations.

2. The Commission shall consider, at the expiration of two years from the date of entry into force of this Convention, whether or not it should recommend to the Contracting Governments that the Commission be brought within the framework of a specialized agency of the United Nations.

ARTICLE XI

1. Each Contracting Government shall pay the expenses of the Commissioners, experts and advisers appointed by it.

2. The Commission shall prepare an annual administrative budget of the proposed necessary administrative expenditures of the Commission and an annual special projects budget of proposed expenditures on special studies and investigations to be undertaken by or on behalf of the Commission pursuant to Article VI, or by or on behalf of any Panel pursuant to Article VII.

3. The Commission shall calculate the payments due from each Contracting Government under the annual administrative budget according to the following formula:

(a) from the administrative budget there shall be deducted a sum of 500 United States dollars for each Contracting Government;

(b) the remainder shall be divided into such number of equal shares as corresponds to the total number of Panel memberships;

(c) the payment due from any Contracting Government shall be the equivalent of 500 United States dollars plus the number of shares equal to the number of Panels in which that Government participates.

4. The Commission shall notify each Contracting Government the sum due from that Government as calculated under paragraph 3 of this Article and as soon as possible thereafter each Contracting Government shall pay to the Commission the sum so notified.

5. The annual special projects budget shall be allocated to the Contracting Governments according to a scale to be determined by agreement among the Contracting Governments, and the sums so allocated to any Contracting Government shall be paid to the Commission by that Government.

6. Contributions shall be payable in the currency of the country in which the seat of the Commission is located, except that the Commission may accept payment in the currencies in which it may be anticipated that expenditures of the Commission will be made from time to time, up to an amount established each year by the Commission in connection with the preparation of the annual budgets.

7. At its first meeting the Commission shall approve an administrative budget for the balance of the first financial year in which the Commission functions and shall transmit to the Contracting Governments copies of that budget together with notices of their respective allocations.

8. In subsequent financial years, the Commission shall submit to each Contracting Government drafts of the annual budgets together with a schedule of allocations, not less than six weeks before the annual meeting of the Commission at which the budgets are to be considered.

ARTICLE XII

The Contracting Governments agree to take such action as may be necessary to make effective the provisions of this Convention and to implement any proposals which become effective under paragraph 8 of Article VIII. Each Contracting Government shall transmit to the Commission a statement of the action taken by it for these purposes.

ARTICLE XIII

The Contracting Governments agree to invite the attention of any Government not a party to this Convention to any matter relating to the fishing activities in the Convention area of the nationals or vessels of that Government which appear to affect adversely the operations of the Commission or the carrying out of the objectives of this Convention.

ARTICLE XIV

The Annex, as attached to this Convention and as modified from time to time, forms an integral part of this Convention.

ARTICLE XV

1. This Convention shall be ratified by the signatory Governments and the instruments of ratification shall be deposited with the Government of the United States of America referred to in this Convention as the "Depositary Government".

2. This Convention shall enter into force upon the deposit of instruments of ratification by four signatory Governments, and shall enter into force with respect to each Government which subsequently ratifies on the date of the deposit of its instrument of ratification.

3. Any Government which has not signed this Convention may adhere thereto by a notification in writing to the Depositary Government. Adherences received by the Depositary Government prior to the date of entry into force of this Convention shall become effective on the date this Convention enters into force. Adherences received by the Depositary Government after the date of entry into force of this Convention shall become effective on the date of receipt by the Depositary Government.

4. The Depositary Government shall inform all signatory Governments and all adhering Governments of all ratifications deposited and adherences received.

5. The Depositary Government shall inform all Governments concerned of the date this Convention enters into force.

ARTICLE XVI

1. At any time after the expiration of ten years from the date of entry into force of this Convention, any Contracting Government may withdraw from the Convention on December thirty-first of any year by giving notice on or before the preceding June thirtieth to the Depositary Government which shall communicate copies of such notice to the other Contracting Governments.

2. Any other Contracting Government may thereupon withdraw from this Convention on the same December thirty-first by giving notice to the Depositary Government within one month of the receipt of a copy of a notice of withdrawal given pursuant to paragraph 1 of this Article.

ARTICLE XVII

1. The original of this Convention shall be deposited with the Government of the United States of America, which Government shall communicate certified copies thereof to all the signatory Governments and all the adhering Governments.

2. The Depositary Government shall register this Convention with the Secretariat of the United Nations.

3. This Convention shall bear the date on which it is opened for signature and shall remain open for signature for a period of fourteen days thereafter.

IN WITNESS WHEREOF the undersigned, having deposited their respective full powers, have signed this Convention.

DONE in Washington this eighth day of February 1949 in the English language.

FOR CANADA: STEWART BATES

FOR DENMARK: B. DINESEN

FOR FRANCE: M. TERRIN (With a reservation excluding paragraph 2 of Article I)

FOR ICELAND: THOR THORS

FOR ITALY: ALBERTO TARCHIANI

FOR HIS MAJESTY'S GOVERNMENT IN THE UNITED KINGDOM AND THE GOVERNMENT OF NEWFOUNDLAND IN RESPECT OF NEWFOUNDLAND:

N. GUSHUE
W. TEMPLEMAN

FOR NORWAY: KLAUS SUNNANAA
GUNNAR ROLLESEN
OLAV LUND

FOR PORTUGAL: MANUEL CARLOS QUINTAO METRELLIS
ALFREDO DE MACHALHAES RAMALHO
JOSE AUGUSTO CORREIA DE BARROS
AMERICO ANGELO TAVARES DE ALMEIDA, CAP FRAC.

FOR SPAIN: GERMAN BARATBAR (Reserving paragraph 2 of Article I)

FOR THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND:

A.T.A. DOBSON
A. J. AGLEN

FOR THE UNITED STATES OF AMERICA:

W. M. CHAPMAN
WILLIAM B.S. FLORY
HILARY J. DEASON
FREDERICK L. ZIMMERMAN

ANNEX

1. The sub-areas provided for by Article I of this Convention shall be as follows:

Sub-area 1 - That portion of the Convention area which lies to the north and east of a rhumb line from a point in 75°00' north latitude and 73°30' west longitude to a point in 69°00' north latitude and 59°00' west longitude; east of 59°00' west longitude; and to the north and east of a rhumb line from a point in 61°00' north latitude and 59°00' west longitude to a point in 52°15' north latitude and 42°00' west longitude.

Sub-area 2 - That portion of the Convention area lying to the south and west of sub-area 1 defined above and to the north of the parallel of 52°15' north latitude.

Sub-area 3 - That portion of the Convention area lying south of the parallel of 52°15' north latitude; and to the east of a line extending due north from Cape Bauld on the north coast of Newfoundland to 52°15' north latitude; to the north of the parallel of 39°00' north latitude; and to the east and north of a rhumb line extending in a northwesterly direction which passes through a point in 43°30' north latitude, 59°00' west longitude, in the direction of a point in 47°50' north latitude, 60°00' west longitude, until it intersects a straight line connecting Cape Ray, on the coast of Newfoundland, with Cape North on Cape Breton Island; thence in a northeasterly direction along said line to Cape Ray.

Sub-area 4 - That portion of the Convention area lying to the west of sub-area 3 defined above, and to the east of a line described as follows: beginning at the terminus of the international boundary between the United States of America and Canada in Grand Manan Channel, at a point in 45°46' 35.34" north latitude, 69°53' 11.23" west longitude; thence due south to the parallel of 43°50' north latitude; thence due west to the meridian of 67°40' west longitude; thence due

south to the parallel of 42°20' north latitude; thence due east to a point in 66°00' west longitude; thence along a rhumb line in a southeasterly direction to a point in 42°00' north latitude, 65°40' west longitude; thence due south to the parallel of 39°00' north latitude.

Sub-area 5 - That portion of the Convention area lying west of the western boundary of sub-area 4 defined above.

2. For a period of two years from the date of entry into force of this Convention, Panel representation for each sub-area shall be as follows:

(a) Sub-area 1 - Denmark, France, Italy, Norway, Portugal, Spain, United Kingdom;

(b) Sub-area 2 - Denmark, France, Italy, Newfoundland;

(c) Sub-area 3 - Canada, Denmark, France, Italy, Newfoundland, Portugal, Spain, United Kingdom;

(d) Sub-area 4 - Canada, France, Italy, Newfoundland, Portugal, Spain, United States;

(e) Sub-area 5 - Canada, United States;

it being understood that during the period between the signing of this Convention and the date of its entry into force, any signatory or adhering Government may, by notification to the Depository Government, withdraw from the list of members of a Panel for any sub-area or be added to the list of members of the Panel for any sub-area on which it is not named. The Depository Government shall inform all the other Governments concerned of all such notifications received and the memberships of the Panels shall be altered accordingly.

* * *



Eighty-first Congress

FEBRUARY 1949

PUBLIC BILLS AND JOINT RESOLUTIONS INTRODUCED AND REFERRED TO COMMITTEES:
Listed below are all the public bills and joint resolutions introduced and referred to committees by the Eighty-First Congress during February 1949 which affect in any way the fisheries and fishing and allied industries. The bills are listed in the order in which they were introduced:

House of Representatives:

H. R. 2118 (Andresen) - A bill to provide for standards to be prescribed by the Secretary of Agriculture governing imported agricultural food products; to the Committee on Agriculture.

H. R. 2337 (Rogers of Mass.) - A bill to provide for an examination and survey of the rivers of the New England States to further the program for the generation of electric energy in such States; to the Committee on Public Works.

H. R. 2363 (Thompson) - Report of Committee on Merchant Marine and Fisheries: A bill granting the consent and approval of Congress to an interstate compact relating to the better utilization of the fisheries (marine, shell, and anadromous) to the Gulf Coast and creating the Gulf States Marine Fisheries Commission; without amendment (Rept. No. 148). Referred to the Committee of the Whole House on the State of the Union.

H. R. 2501 (Bland) - A bill authorizing and directing the United States Fish and Wildlife Service of the Department of the Interior to undertake a continuing study of the shad, *Alosa sapidissima*, of the Atlantic Coast with respect to the biology, propagation, and abundance of such species to the end that such Service may recommend to the several States of the Atlantic Coast through the Atlantic States Marine Fisheries Commission appropriate measures for arresting the decline of this valuable food fish and for increasing the abundance and promoting the wisest utilization thereof; to the Committee on Merchant Marine and Fisheries.

H. R. 2502 (Bland) - A bill appropriating to the United States Fish and Wildlife Service the sum of \$75,000 for a continuing study of shad, *Alosa sapidissima*, of the Atlantic Coast, with respect to the biology, propagation, and abundance of such species to the end that such Service may recommend to the several States of the Atlantic Coast through the Atlantic States Marine Fisheries Commission appropriate measures for

arresting the decline of this valuable food fish and for increasing the abundance and promoting the wisest utilization thereof; to the Committee on Appropriations.

- H. R. 2623 (Walsh) - A bill to promote the orderly and fair marketing of essential foods in commerce; to prevent confusion, fraud, and deception in commerce; and to prohibit practices which burden, obstruct, or affect commerce, the free flow of goods in commerce, or the production of goods for commerce, and for other purposes; to the Committee on Agriculture.
- H. R. 2648 (Hagen) - A bill to establish the Fish and Wildlife Advisory Board; to the Committee on Merchant Marine and Fisheries.
- H. R. 2740 (Preston) - A bill to establish rearing ponds and a fish hatchery at or near Millen, Ga.; to the Committee on Merchant Marine and Fisheries.
- H. R. 2954 (Willis) - A bill granting the consent and approval of Congress to an interstate compact relating to the better utilization of the fisheries (marine, shell, and anadromous) of the Gulf Coast and creating the Gulf States Marine Fisheries Commission; to the Committee on Merchant Marine and Fisheries.
- H. R. 2956 (Willis) - A bill to confirm and establish the titles of the States to lands and resources in and beneath navigable waters within State boundaries and to provide for the use and control of said lands and resources; to the Committee on the Judiciary.
- H. R. 3046 (Kilburn) - A bill to authorize the expansion of facilities at the Cape Vincent, N. Y., fish-cultural station; to the Committee on Merchant Marine and Fisheries.

The following bills were introduced during January 1949 and not previously reported under this section:

- H. R. 1211 (Doughton) - A bill to extend the authority of the President under section 350 of the Tariff Act of 1930, as amended, and for other purposes; to the Committee on Ways and Means.
- H. R. 2033 (Lesinski) - A bill to provide for the amendment of the Fair Labor Standards Act of 1938, and for other purposes; to the Committee on Education and Labor.

Senate:

- S. 856 (Magnuson) - A bill to provide for an adequate and balanced flow of fish and fish products in interstate and foreign commerce, and for other purposes; to the Committee on Interstate and Foreign Commerce, and appears under a separate heading.
- S. 1075 (Johnson of Colorado) - A bill to provide that the United States shall aid the States in fish restoration and management projects, and for other purposes; to the Committee on Interstate and Foreign Commerce.
- S. 1094 (O'Connor) - A bill authorizing and directing the United States Fish and Wildlife Service of the Department of the Interior to undertake a continuing study of the shad, Alosa sapidissima, of the Atlantic Coast with respect to the biology, propagation, and abundance of such species to the end that such Service may recommend to the several States of the Atlantic Coast through the Atlantic States Marine Fisheries Commission appropriate measures for arresting the

decline of this valuable food fish and for increasing the abundance and promoting the wisest utilization thereof; to the Committee on Interstate and Foreign Commerce.

S. Res. 64 (Magnuson) - To authorize study and investigation of fishing resources of the U. S.; to the Committee on Interstate and Foreign Commerce.

The following bill was introduced during January 1949 and not previously under this section:

S. 248 (Thomas of Utah, Pepper, Chavez, Green, Magnuson, McGrath, Murray, Myers, Taylor, and Wagner) - A bill to provide for the amendment of the Fair Labor Standards Act of 1938, and for other purposes; to the Committee on Labor and Public Welfare, and appears under a separate heading.



THE FISH LIVER OIL INDUSTRY

Cod liver oils were in use as general medicinals as early as 1840. The cod liver oils from the English, Norwegian, and Newfoundland fisheries were, for years, the chief sources of supply. Pharmaceutical houses, interested in the procurement of better quality oils, gradually improved the conditions for selection and care of the livers and the technique of processing and refining. Early in the twentieth century, chemists established the fact that the beneficial factors in fish liver oils were the vitamins A and D.

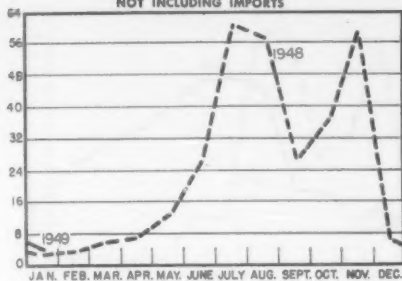
Then, in 1929, it was reported that the oil from the livers of Atlantic halibut had a higher vitamin A and D content than cod liver oil. Within two years, pharmaceutical companies were purchasing livers in the Pacific Coast halibut fishery. Shortly thereafter they began to buy tuna livers also. As a result of the stimulated interest in sources of supply, sablefish, lingcod, and rockfish livers were next found to be of value. Subsequently, grayfish livers, and halibut and sablefish viscera were processed for vitamin oils.

In 1937, livers from the soupfin shark were first processed in California. After a preliminary period, in which the types of gear most suitable for the capture of the soupfin shark were being worked out, this fishery assumed more and more importance. The combination of high vitamin A content and high oil content peculiar to the soupfin liver was particularly valuable as war conditions over the world began to interfere with the normal movement of fish liver oils from foreign sources.

--Fishery Leaflet 233

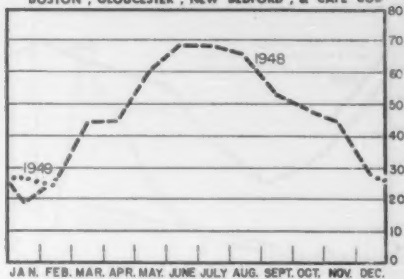
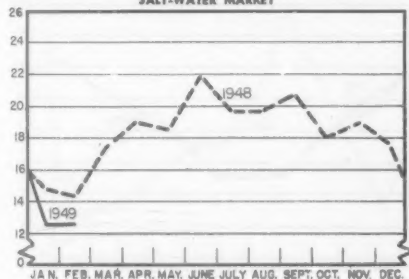
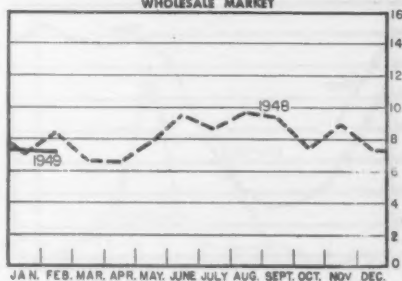
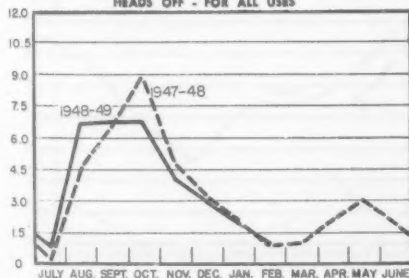
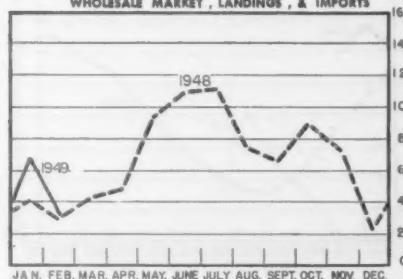
LANDINGS AND RECEIPTS

In Millions of Pounds

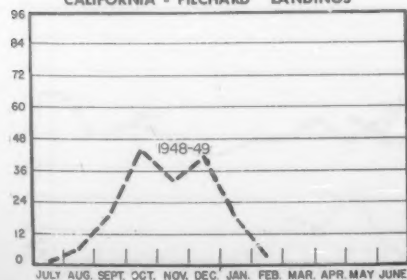
MAINE - LANDINGS
NOT INCLUDING IMPORTS

MASSACHUSETTS - LANDINGS

BOSTON, GLOUCESTER, NEW BEDFORD, & CAPE COD

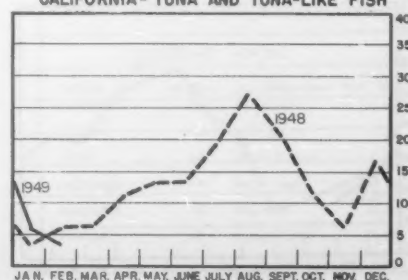
NEW YORK CITY - RECEIPTS OF FRESH & FROZEN FISH
SALT-WATER MARKETCHICAGO - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKETGULF - SHRIMP LANDINGS
HEADS OFF - FOR ALL USESSEATTLE - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET, LANDINGS, & IMPORTS

CALIFORNIA - PILCHARD LANDINGS



In Thousands of Tons

CALIFORNIA - TUNA AND TUNA-LIKE FISH

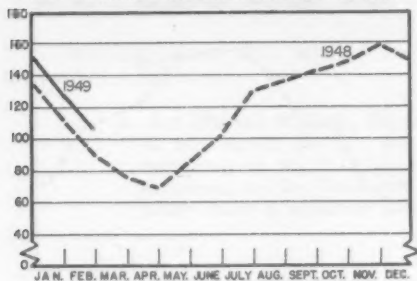


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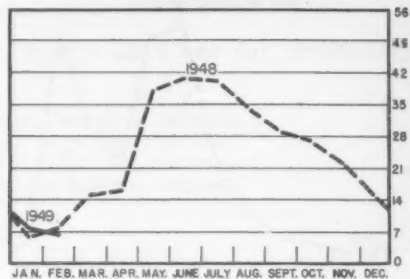
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds

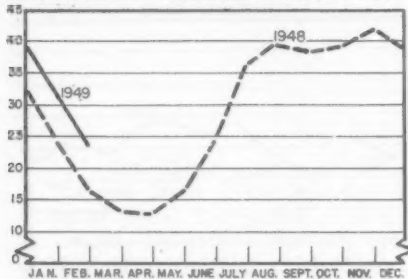
U.S. & ALASKA - HOLDINGS OF FROZEN FISH



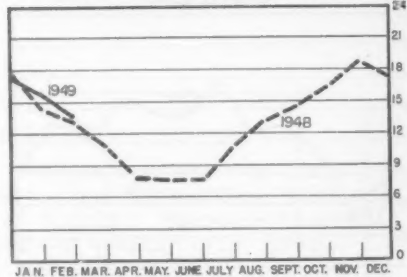
U.S. & ALASKA - FREEZINGS



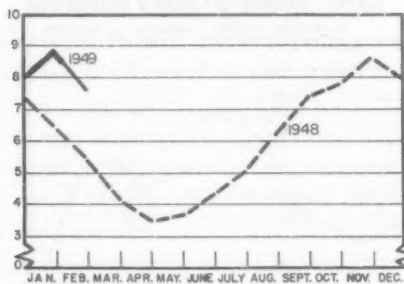
NEW ENGLAND - HOLDINGS OF FROZEN FISH



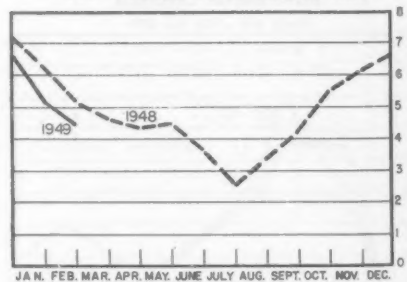
NEW YORK CITY - HOLDINGS OF FROZEN FISH



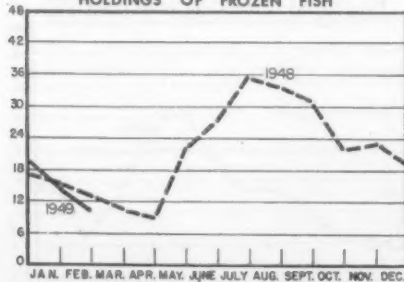
CHICAGO - HOLDINGS OF FROZEN FISH



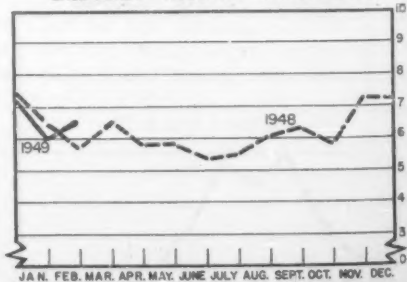
GULF - HOLDINGS OF FROZEN FISH



WASHINGTON, OREGON, AND ALASKA - HOLDINGS OF FROZEN FISH



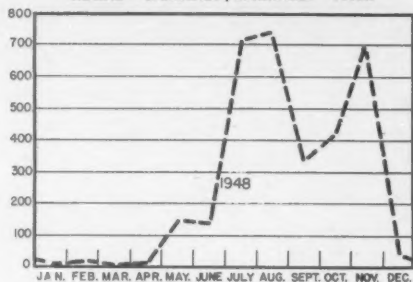
CALIFORNIA - HOLDINGS OF FROZEN FISH



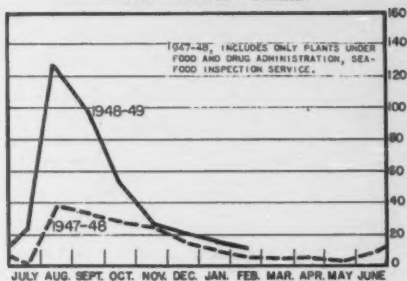
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

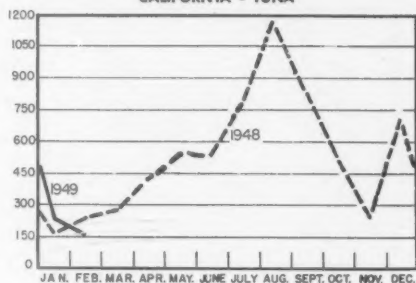
MAINE - SARDINES, ESTIMATED PACK



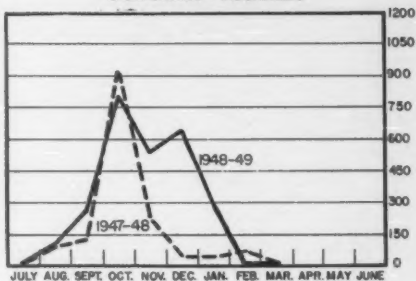
UNITED STATES - SHRIMP



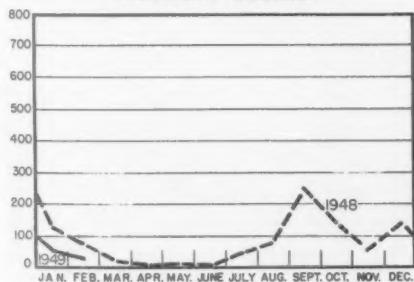
CALIFORNIA - TUNA



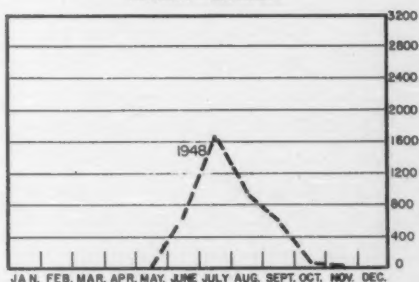
CALIFORNIA - PILCHARDS



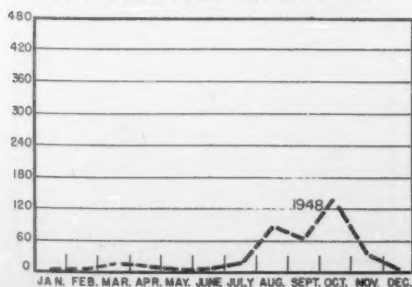
CALIFORNIA - MACKEREL



ALASKA - SALMON



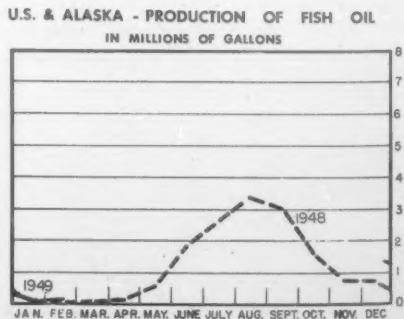
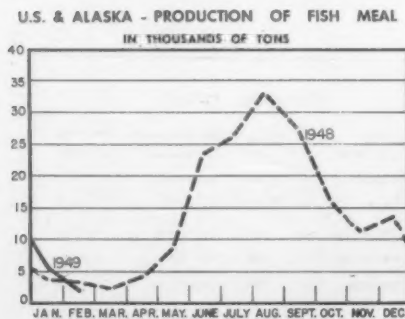
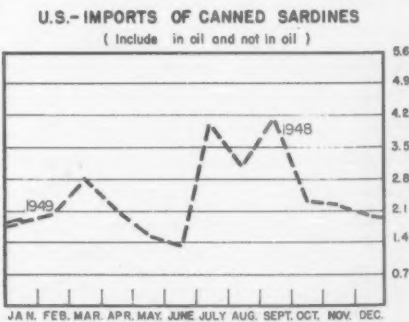
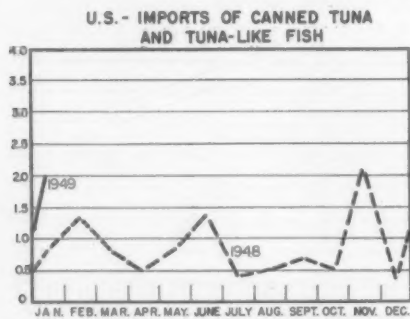
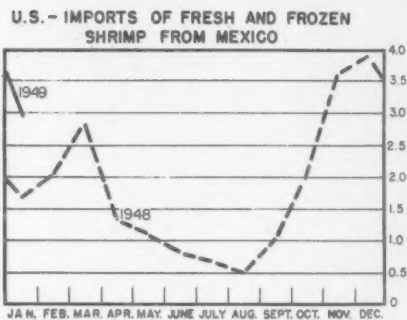
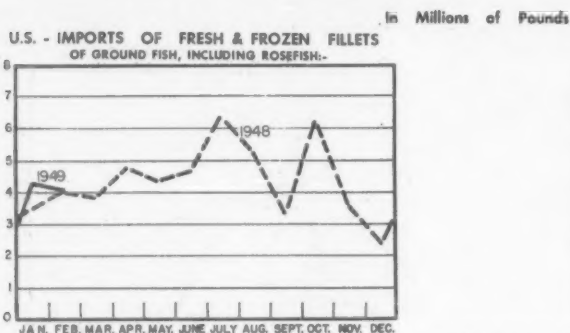
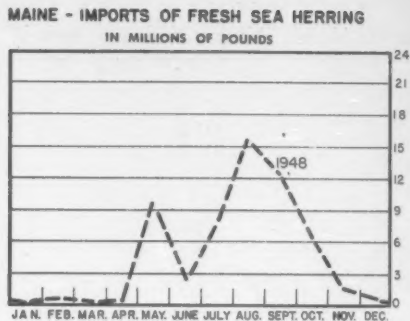
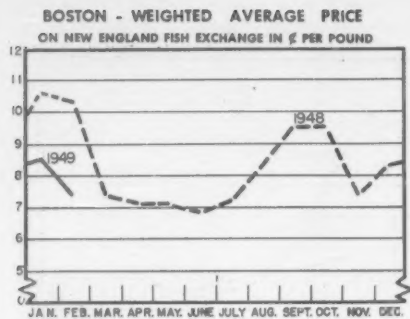
WASHINGTON - PUGET SOUND SALMON

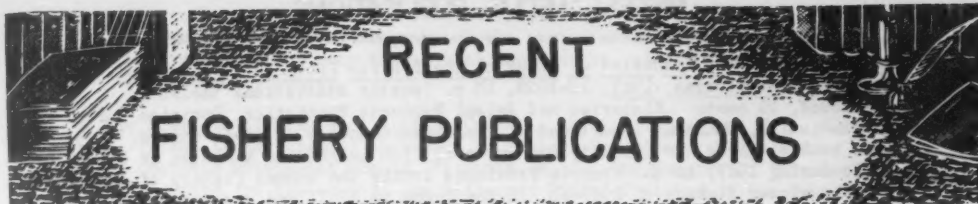


STANDARD CASES

Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	No. 1 picnic	7 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound troll	16 oz.

PRICES, IMPORTS and BY-PRODUCTS





RECENT FISHERY PUBLICATIONS

Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
- FL - FISHERY LEAFLETS.
- MDL - MARKET DEVELOPMENT SECTION LISTS OF DEALERS, LOCKER PLANTS, ASSOCIATIONS, ETC.
- SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
- SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number | Title |
|------------------|---|
| CFS-442 | - Massachusetts Landings, July 1948 |
| CFS-450 | - Frozen Fish Report, January 1949 |
| CFS-451 | - Maine Landings, November 1948 |
| SL-151 (Revised) | - Firms Manufacturing Fish Meal, Scrap, Oils, Etc., 1947 |
| MDL-51 (Revised) | - Officials of Refrigerated Locker Plant Associations, State and National |

- Sep. 121 - The Shrimp Fishery of the Southern United States
- Sep. 224 - Studies on Methods of Extracting Vitamin A and Oil from Fishery Products - Part II-Experiments on the Solvent Extraction of Low-Fat Livers

Alaska Fishery and Fur-Seal Industries: 1946, by Ward T. Bower, Statistical Digest No. 17, 70 p., processed, 25 cents a copy. (For sale only by the Superintendent of Documents, Washington 25, D. C.) This bulletin contains detailed reports and statistical tables concerning the operation and yield of the various Alaska fishery and fur-seal industries during 1946, and there are included also data on certain related matters, particularly the condition of the fishery resources. It covers the changes in Alaska fishing laws and regulations; reports on salmon counting weirs; observations on runs and escapement of salmon; general statistics on the salmon, herring, halibut, shellfish fisheries, and miscellaneous fishery products; general administration of the Pribilof Islands fur-seal industry; sealing privileges accorded aborigines; and statistics and data on natives, fur seals, reindeer, foxes, and computation of fur seals.

Organizations and Officials Concerned with Wildlife Protection: 1948, Wildlife Leaflet 313, 33 p., processed, free. Includes names and addresses of organizations and officials concerned with the protection of fishes and fisheries, mammals, and birds. It includes United States federal and state government agencies, Canadian dominion and provincial government bodies, Latin American government organizations, and varied private groups in the United States, Canada, and Latin America. Intended for persons interested in wildlife and fishery conservation and management.

ARTICLES BY FISH AND WILDLIFE SERVICE AUTHORS IN OTHER PUBLICATIONS

"Packaging and Storing Frozen Fish Products," by S. R. Pottinger, Frozen Food Industry and Locker Plant Journal, December 1948, Vol. 4, No. 12, pp. 12-13, 23-25, illus. (No reprints available from the Service.)

MISCELLANEOUS PUBLICATIONS

THE FOLLOWING PUBLICATIONS MAY BE OBTAINED, IN MOST INSTANCES, FROM THE AGENCIES ISSUING THEM.

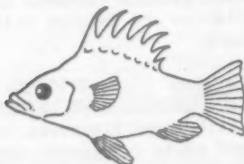
Advance Report on the Fisheries of Ontario, the Prairie Provinces, Yukon, and Northwest Territories, 1947, 12-102X, 18 p. (mostly statistical tables), processed, 10 cents. Fisheries and Animal Products Statistics, Dominion Bureau of Statistics, Canadian Department of Trade and Commerce, Ottawa, Canada, 1949. This booklet gives the quantity and value of fish caught and marketed in Ontario during 1947, in the Prairie Provinces during the summer fishery of 1947 and the winter fishery of 1947-48, in the Yukon in 1947, and the Northwest Territories during the summer fishery of 1947 and winter fishery of 1947-48.

Definitions and Standards for Food, S. R. A., F. D. C. 2 Rev. 1, 72 p., printed, free. Food and Drug Administration, Federal Security Agency, Washington, D. C., January 1949. This publication contains the definitions and standards for food and amendments thereto promulgated under the Federal Food, Drug, and Cosmetic Act, as they appear in the compilation published in the Federal Register on October 30, 1948 (13 F. R. 6377), as amended (13 F. R. 6969), together with the general regulations for food standards as they appear in the Code of Federal Regulations (21 CFR Cum. Supp. 10.2; 21 CFR 1943 Supp. 10.0). The preface contains some of the relevant sections of the Federal Food, Drug, and Cosmetic Act and general regulations. One chapter is devoted to definitions and standards of identity and fill of container for shellfish (canned shrimp, canned oysters, and raw shucked oysters).

Extension of Reciprocal Trade Agreements Act (Hearings before the Committee of Finance, United States Senate, Eighty-First Congress, First Session, on H. R. 1211, an act to extend the authority of the President under section 350 of the Tariff Act of 1930, as amended, and for other purposes, Part 1, February 17-23, 1949), 867 p., printed. Available only from the Senate Committee on Finance until exhausted. This report contains the text of H. R. 1211, the statements of the various members of the fishery industries made before the Senate's Committee on Finance, the statement of the Chief of the Service's Branch of Commercial Fisheries, charts and graphs showing the various aspects of the problems regarding imports of fishery products, and a list of foreign governments giving aid to their fisheries submitted by the Service and illustrated with maps.

Fisheries Statistics of Canada, 1946, D.B.S. 12-1010-P, 290 p., printed, 50 cents. Dominion Bureau of Statistics, Department of Trade and Commerce, Ottawa, Canada. This report consists almost entirely of tables giving the 1946 Canadian fishery products statistics of the catch, products marketed in a fresh state or domestically prepared, manufactured fish products, and imports and exports for Canada and for each Province. It contains summary tables, detailed tables, and historical review tables of all phases of the Canadian fishery industries.

Fishes of the Western North Atlantic, Part I, Memoir Number 1 (Lancelets, by H. B. Bigelow and Isabel Perez Farfante; Cyclostomes, by H. B. Bigelow and W. C. Schroeder; Sharks, H. B. Bigelow and W. C. Schroeder), 576 p., 106 line drawings and 2 maps, printed, \$10.00. Sears Foundation for Marine Research, Bingham Oceanographic Laboratory, Yale University, New Haven, Conn., 1948. This book, an authoritative and significant contribution dealing primarily with sharks, will be of interest to the commercial fisherman and sportsman as well as the ichthyologist and marine biologist.



All of the authors' knowledge of each species, accumulated over the many years, has been incorporated in this work which contains keys to genera and species. In addition to the description, all that is known of the shark's life history is given, as well as its commercial importance and sporting qualities. Although devoted to sharks for the most part, this book gives accounts of two small groups of marine inhabitants known as the Lancelets and Cyclostomes. The former, although fish-like in appearance, are not true vertebrates, while the latter, with their eel-like bodies and peculiar jawless mouths, are the most primitive vertebrates. Fishes of the Western North Atlantic

is to be published in a series of volumes of which this is Part I. The future volumes will contain accounts of the skates and rays, chimaeras and sturgeons, and all the true bony fishes that inhabit the waters from Hudson Bay southward to the Amazon River.

The Fresh-Water Fishes of British Columbia, by G. C. Carl and W. A. Clemens, 132 p., illus. (some colored), printed, 50 cents. Department of Education, British Columbia Provincial Museum, Victoria, B. C. The purpose of this booklet is to acquaint the reader with the different kinds of fishes in the lakes and rivers of British Columbia. It discusses the environment, distribution and economic importance, of each of the fresh-water fishes. A key to families of fresh-water fishes of British Columbia is given. The booklet concludes with a glossary, bibliography, and an appendix which includes data on the collection and preservation of specimens.

Instructions on Processing for Community Frozen-Food Locker Plants, Miscellaneous Publication No. 588, 23 p., illus., printed. Production and Marketing Administration, U. S. Department of Agriculture, Washington, D. C., Revised August 1948. This publication gives up-to-date information on what products to freeze and how to prepare them for community frozen-food locker plants. Includes a small section on freezing of fish, the thawing and cooking of frozen fish, and a partial list of manufacturers of supplies for frozen food lockers.

The Market for United States Fishery Products in Western Europe (Foreign production and international trade in fishery products as related to the United States market in Europe for those products), by A. M. Sandberg, Foreign Agriculture Circular, FFP-1-49, February 20, 1949, 22 p., mimeographed. Office of Foreign Agricultural Relations, U. S. Department of Agriculture, Washington, D. C., free. This report summarizes the personal observations of the author (Fishery Marketing Specialist of the Fish and Wildlife Service) in the study he made for the Office of Foreign Agricultural Relations of the fishery production and trade in western Europe in order to provide pertinent facts which would aid members of the United States fishery industry in the formulation of their production and marketing programs. In the course of the foreign survey, which was conducted during the period mid-August through mid-October 1948, the author visited the United Kingdom, France, Eire, the Netherlands, Belgium, western Germany, Austria, Switzerland, Italy, and Greece. To broaden the picture with respect to competition in western Europe, information available in the Washington office was utilized in the preparation of the statements contained in the report relating to the supply situation of fishery products in the exporting countries of Norway, Denmark, Sweden, Iceland, Spain, Portugal, French Morocco, the Union of South Africa, Russia, Japan, Canada, and Newfoundland, all of which market some fishery product in Europe. The study was conducted under the provisions of the Research and Marketing Act of 1946, as amended. Included are tables giving the United States exports of edible fishery products by country of destination; the landings of fishery products in specified European countries; and a list of some canned fish products and prices observed at random in various European markets in September 1948.

Maryland Conservation Officials and Organizations, by W. H. Bayliff, Educational Series No. 10 (3rd Edition), 23 p., printed. Maryland Department of Research and Education, Board of Natural Resources, Solomons, Md., October 1948. Part I of this bulletin contains a list of official State agencies established by statute and concerned either directly or indirectly with the natural resources of Maryland. Part II lists the non-official conservation organizations, in other words, those organizations which have arisen spontaneously among interested citizens of the State. Only organizations whose activities are State-wide are included. Federal agencies are excluded.

"Point Four" (The Truman "Point Four" Program for World Economic Progress Through Cooperative Technical Assistance), 11 p., processed, free. Office of Public Affairs, Department of State, February 1949. This publication covers the proposal, plans, purpose and methods of carrying out President Truman's "Point Four" program for world economic progress through cooperative technical assis-

tance. The program visualizes the improvement, throughout the world, of agricultural methods, including forestry and fisheries.

Pond Management for Indiana Ponds, by W. E. Ricker and L. A. Krumholz, 10 p., printed. Division of Fish and Game, Indiana Department of Conservation, Indianapolis, Ind. Briefly explains suitability of ponds for fish, stocking of fish ponds, fertilizing ponds, removing undesirable fish, cropping pond fishes, and lists publications concerning fish ponds.

"A Program for Japanese Fisheries," by Ada Espenshade, article, The Geographic Review, January 1949, Vol. XXXIX, No. 1, pp. 76-85, with photos. American Geographical Society, New York, N. Y. The author outlines a seven-point program for both a long-range and short-term increase in fisheries production by the Japanese. Included in the program are: reorientation and improvement of fishery research; better statistics; expanded educational program; revised fishery laws and regulations; improvements in handling and transporting; expansion of fishing areas; and foreign trade.

Recipes, Lake Trout and Whitefish, by Helen Baeder, Circular Bulletin 209, 31 p., colored illus., printed. Agricultural Experiment Station, Michigan State College, East Lansing, Mich., January 1948. Fish recipes given are for popular eating fish caught in the Great Lakes region. In addition to discussing how to cook fish, the booklet includes sections on how to buy fish, how much fish to buy, and how to prepare fish for cooking.

The Spiny Lobster Industry of the Caribbean and Florida, by F. G. Walton Smith, Fisheries Series No. 3, 49 p., illus., printed. Caribbean Commission, Kent House, Port-of-Spain, Trinidad; and Columbia University Press, New York, N. Y., 1948. In this booklet is found a summarization of available information regarding the habits and biology of the spiny lobster and the scope and methods of the fishing industry supported by it in the Caribbean area. It includes data on the distribution of the spiny lobster, biology, possibilities of artificial propagation, fishing methods, methods of marketing and value of the fishery, regulation of the industry, statistics, and recommendations for future research. The booklet concludes with a select bibliography and a technical appendix giving the Caribbean species of spiny lobsters and a field key to the Caribbean spiny lobster.

The Sponge Industry of Florida, by J. G. Tierney, Educational Series No. 2, 19 p., printed. Marine Laboratory, Florida Board of Conservation, University of Miami, Coral Gables, Fla., 1949. This booklet gives a resume of the Florida sponge industry and is divided into two parts. The first part discusses the life of the sponge and includes answers to the questions: What are sponges? How do sponges feed? How do sponges grow and reproduce? Where are sponges found? and How are they caught? The second part deals with the value of the sponge industry to the State, what has happened to the sponge industry in recent years, the measures which should be taken to protect and develop the industry, what can be done by sponge cultivation, and what is being done for the sponge industry by the State.

United States Exports of Canned Sardines, Salmon, and Shrimp--1947 and 1948, by M. W. Wallar and A. A. Hackbarth, Foods and Related Agricultural Products, World Trade in Commodities, January 1949, Vol. VII, Parts 6, 7, and 8, No. 2, 2 p., printed. Office of International Trade, Department of Commerce, Washington 25, D. C. (Available by purchase only at 5 cents per copy from the U. S. Superintendent of Documents, Washington 25, D. C., or Department of Commerce Field Offices). This bulletin lists the United States exports of canned sardines, salmon, and shrimp in the first nine months of 1948 compared with the corresponding period of 1947. Tables show exports of these products by country of destination.

"Whale Meat--Norway Expands its Production," by I. A. Jacobsen, article, Foreign Agriculture, January 1949, Vol. XIII, No. 1, pp. 21-22, Office of Foreign Ag-

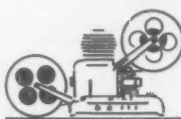
ricultural Relations, Department of Agriculture, Washington, D. C. (Copies of the publication available from Superintendent of Documents, Washington 25, D. C., 15 cents per copy.) The author discusses the expansion of the production of whale meat by Norway, and the problems involved in producing meat and byproducts at the same time.

"1948 Food Consumption Surveys": Family Food Consumption in Birmingham, Ala., Winter 1948, Preliminary Report No. 1, FE 685, 30 p., processed, 11/22/48; Family Food Consumption in Minneapolis-St. Paul, Minn., Winter 1948, Preliminary Report No. 2, FE 693, 30 p., processed, 12/20/48; Family Food Consumption in San Francisco, Cal., Winter 1948, Preliminary Report No. 3, FE 696, 30 p., processed, 1/31/49. Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, U. S. Department of Agriculture, Washington 25, D. C. These booklets report on the average quantity and expense for purchased foods (including fish and shellfish), used at home per household per week, as well as the percentage of households using the various foods by annual income class and housekeeping families of two or more persons in Birmingham, Ala., Minneapolis-St. Paul, Minn., and San Francisco, Cal. Include data on fresh fish, canned salmon, other canned fish (including sardines and tuna), smoked and cured fish, fresh and frozen shellfish in the shell and shelled, and canned cooked shellfish.

Studies in Fresh-Water Fishery Biology, by K. F. Lagler, 240 p., illus., third revised edition, printed, \$4.00. J. W. Edwards, Ann Arbor, Michigan. This book is a reference work in general fishery biology. One chapter is devoted to inland commercial fisheries.



Whale Oil, by D. Bayles and S. M. Sackrin, Foods and Related Agricultural Products, World Trade in Commodities, February 1949, Vol. VII, Parts 6, 7, and 8, No. 7, 4 p., processed. Office of International Trade, Department of Commerce, Washington 25, D. C. (For sale by the U. S. Superintendent of Documents, Washington 25, D. C., 5 cents per copy.) Discusses the whaling operations in the Antarctic and by land stations, and international cooperation. The report gives current statistics, uses of whale oil, and consumption in leading markets. It also contains a table showing the whale oil production for the seasons 1937-38 through 1947-48 and another table showing the Antarctic whaling operations for the seasons 1938-39 through 1947-48.



FISHERY MOTION PICTURES

The following motion pictures are available
only from the source given in each listing.



It's the Maine Sardine, 16 mm. color and sound, 15 minutes. Produced by the Fish and Wildlife Service in cooperation with the Maine Department of Sea and Shore Fisheries and the Maine Sardine Packers Association. The film depicts the catching of sardines off the Maine coast and the packing methods in local canneries. It is intended for general showings to such audiences as trade groups, women's organizations, students, etc. Can be borrowed from the DIVISION OF INFORMATION, FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. (Because the number of prints is limited, requests for booking the film should be made as far in advance as possible. Requests will be handled in order of receipt. Each request should indicate clearly the address to which the shipment is to be made. Shipments are usually made by express, the borrower paying transportation charges both ways, but there is no charge for the use of the film.)

Processing -- Miscellaneous Service Division

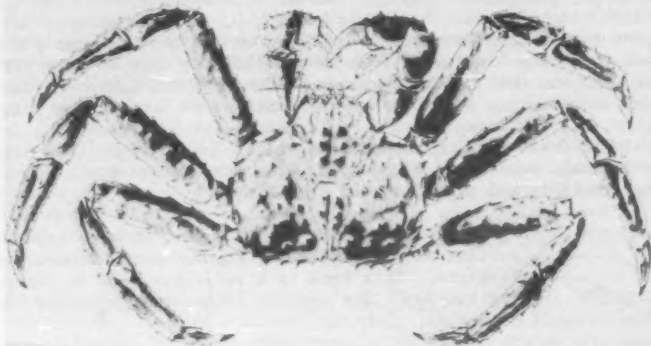
Illustrator -- Gustaf T. Sundstrom

Compositors -- Jean Zalevsky and Norma D. Loeffel

CANNED CRAB INDUSTRY OF JAPAN

Fishery Leaflet 314, "Canned Crab Industry of Japan," is a reproduction of Report No. 109, Natural Resources Section, General Headquarters, Supreme Commander for the Allied Powers, Tokyo, issued July 26, 1948.

This 50-page illustrated report contains pertinent facts concerning resources, production, and processing methods of the prewar Japanese crab canning industry. Japanese records, statistics, and literature have provided source material, and voluminous records on yearly catches and packs, activities of the floating canneries, export figures, and other information concerning the industry have been translated and abstracted for this report.



ADULT MALE TARABA CRAB, PARALITHODES CAMTSCHATICA
(CARAPACE WIDTH 185 MM. ONE-THIRD LIFE SIZE.)

Discussions on the classification and biology of the Japanese crab species; the canned crab industry; operation of land-based and floating canneries; inspection and grading; lacquer and paper specifications; bacteriological studies; and byproducts of crab canning are included in this publication. In addition to numerous figures and tables, a reference list of important publications dealing with the industry is appended.

The above-mentioned Fishery Leaflet 314 can be obtained free upon request from the U. S. Fish and Wildlife Service, Washington 25, D. C.

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